

**Prof. Dr. Alfred Toth**

## **Spuren des Nichts. Kontexturierte surreale dyadisch-trivalente Semiotik**

**(3. Teil von: „Die Konstruktion von Triaden aus Dyadenpaaren ohne vordefinierte Trichotomien“)**

man darf nicht nur den vorhang betrachten.

dies ist das oberste gebot und verdient beachtet zu werden.

schliesslich entsteht ein flackernder bogen, eine art feuerkrone um den zenith. das licht ergiesst sich über den himmel und erfüllt die zuschauer mit staunen. langsam verschwindet das phänomen. zurück bleibt eine allgemeine, starke helle.

Konrad Bayer, Der Kopf des Vitus Bering (Framkfurt am Main 1970, S. 19)

1. Das Zeichen ist nicht Nichts, weil es am Sein kraft seines Mittelbezugs partizipiert, es setzt allerdings nach Bense (1975, S. 16) neben der Welt auch das Bewusstsein in eine Funktion und thematisiert daher das Nichts. Vielleicht ist es wahr, dass wir des Nichts, das ja nach Heidegger im Sein „west“, nicht anders habhaft werden können, als es in der Keno- und Morphogrammatik zu präsentieren und in der Semiotik zu repräsentieren. Mit der Bedeutung hat das Nichts also gemein, dass es nur kodiert auftreten kann, und es ist vielleicht auch wahr, dass das Nichts deshalb an die Bedeutung gebunden ist und also deshalb nicht in rein formal-syntaktischen Systemen aufscheinen kann. Falls dies so ist, dann stellt also die Mathematik das radikalste System der Negation des Nichts dar. Die Kombination von Mathematik und Bedeutung, also sozusagen der Entwurf einer „heuristischen Hermeneutik“, innerhalb der mathematischen Semiotik bedeutet somit eine stete Gratwanderung zwischen dem Sein und dem Nichts, dort also, wo, wie Nietzsche in anderem Zusammenhang bemerkte, die Luft sehr dünn wird. Man braucht daher nicht bis ins „Eis und Hochgebirge“ hochzusteigen, um diese dünne Luft zu atmen, denn sowohl Sein als auch Bewusstsein treten in der semiotischen Funktion als Pole auf, d.h. obwohl das Sein nicht nur am Sein, sondern auch am Bewusstsein partizipiert, erreicht es beide nicht, oder genauer: sie sind gar nicht definiert. Das hat, wie vor allem Rudolf Kaehr im Anschluss an Günther gezeigt hat, seinen tieferen

Grund darin, dass die Welt, d.h. der Objektbereich, in den tiefsten Tiefen, die unser Bewusstsein gerade noch erreichen kann, in der Keno- und Morphogrammatik, in „kenomatischen Gittern“ (kenomatic grids) aufgelöst wird. D.h. Keno- und Morphogrammatik sind so abstrakt und allgemein, dass sie die Koinzidenz von Sein und Bewusstsein selbst thematisieren, indem sie sie als ein gigantisches System von strukturiertem und systematisierten Nichts präsentieren. Das Bayersche Zitat spielt natürlich auf Günthers Aufforderung an, den Vorgang am Hegelschen Werden, wo sich Sein und Nichts treffen, beiseite zu schieben, ins Nichts hineinzugehen, um dort jene Welt zu schaffen, „die Gott nicht geschaffen hat“.

Es wäre allerdings ein grosser Denkfehler anzunehmen, man bräuchte blass die Leerstellen der Keno- und Morphogramme mit Zahlen, Werten oder Zeichen zu besetzen, um aus den präsentierenden repräsentierende Formeln zu machen. Dabei würden die ganz eigene und merkwürdige Welt der mathematischen Gesetze der Semiotik, die selbst auch die Mathematik und die Logik beeinflusst, auf der Strecke bleiben. *Die Semiotik nicht berücksichtigt zu haben, war einer der kapitalen Fehler der noch in den Kinderschuhen steckenden Polykontexturalitätstheorie, der erst im Jahre 2008 durch zahlreiche Arbeiten Rudolf Kaehrs korrigiert wurde, die man nur als bahnbrechend und genial bezeichnen kann und die zur crème de la crème dessen gehören, was in der Semiotik überhaupt je geschaffen wurde.* Vermutlich ist auch Kaehrs Konzeption, sowohl Arithmetik, Logik, Modelltheorie und weitere mathematische Grundlagenwissenschaften zusammen mit der Semiotik unter einer „Graphematik“ zu vereinheitlichen, richtig, auch wenn ich eingestehen muss, dass ich mich mit Derrida und der Dekonstruktion im allgemeinen nie richtig anfreunden konnte.

Jedenfalls geht es in diesem Beitrag aber um die in Derridas Werk zentrale Konzeption der „Spur“. Wenn die Polykontexturalitätstheorie die coincidentia von Sein und Bewusstsein innerhalb der Güntherschen „Meontologie“ mittels Keno- und Morphogrammatik thematisiert, dann trägt das sowohl an Sein als auch an Bewusstsein partizipierende Zeichen dessen Spuren, also die Spuren des Nichts, d.h. des Güntherschen Reflexionsbereichs, der bisher fast nur aussersemiotisch, z.B. mit Hilfe von Hamiltonkreisen und Permutographen,

analysiert wurde. In der hier vorzulegen Arbeit gehe ich dagegen von der in Toth (2011a) konzipierten dyadisch-trivalenten Semiotik und den in Toth (2011b) vorgestellten „Schatten des Nichts“ aus, zu deren Darstellung ich anstatt Peirce-Zahlen die surrealen Conway-Zahlen verwandt hatte, eine Art von Zahlen, die den Dedekindschen Schritten verwandt, aber nicht mit ihnen identisch sind (da Domänen und Codomänen bei surrealen Zahlen leer sein dürfen, ja, in manchen Fällen sogar leer sein sollen). Für die theoretischen Voraussetzungen des nun Folgenden sei somit einfach auf Toth (2011a) und (2011b) verwiesen.

Auf eine hier zu präsentierende wesentliche Neuerung, von der ich nicht unbedingt stillschweigend annehmen kann, dass jeder Leser sie bemerkte, sei deshalb explicite zum voraus hingewiesen: Die dyadisch-trivale Zeichenrelation

$$ZR^* = ((a.b), (c.d)) \text{ mit } a, \dots, d \in \{1, 2, 3\}$$

übernimmt im folgenden von der bekannten Peirceschen Zeichenrelation (Bense 1979, S. 53)

$$ZR = (1 \rightarrow ((1 \rightarrow 2) \rightarrow (1 \rightarrow 2 \rightarrow 3)))$$

die „Einschachtelung“ der Kategorien:  $1 \subset 2 \subset 3$  bzw. die für die Semiotik so charakteristische Konzeption einer „Relation über Relationen“, insofern im folgenden die Peirce-Zahlen in einer solchem Weise surreal eingeführt werden, dass deren rekursive Definition einen minimalen Mirimanoff-Effekt (auch „Droste-“, oder „La vache qui rit“-Effekt genannt) erzeugt.





















$$\begin{aligned}
& (((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})a, (\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})c) \\
& \quad \rightarrow ((\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}.\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})c) \\
& \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})a, (\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})b) \\
& \quad \rightarrow ((\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}.\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})b) \\
& \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})a, (\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c)
\end{aligned}$$

$$\begin{aligned}
& (((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c) \circ \\
& \quad (((\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\emptyset\} \mid \\
& \quad \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c) \rightarrow (((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \\
& \quad \emptyset\}.\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c) \\
& \quad (((\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \\
& \quad \{\{\{2\} \mid \emptyset\}\}\})a) \rightarrow (((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \\
& \quad \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a) \\
& \quad (((\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \\
& \quad \emptyset\})c) \rightarrow (((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \emptyset\}.\{\emptyset\} \mid \\
& \quad \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c)
\end{aligned}$$



$$\begin{aligned}
& (((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\emptyset_i \mid (\{1\} \mid (\{2\} \mid \emptyset_j))))c) \\
\rightarrow & (((\emptyset_i \mid (\{1\} \mid (\{2\} \mid \emptyset_j))).(\{1\} \mid (\{2\} \mid \emptyset_j)))a, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b) \\
& (((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b) \rightarrow \\
& (((\emptyset_i \mid (\{1\} \mid (\{2\} \mid \emptyset_j))).(\{1\} \mid (\{2\} \mid \emptyset_j)))a, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b) \\
& (((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\{2\} \mid \emptyset_j))b.c) \rightarrow ((\emptyset_i \mid \\
& (\{1\} \mid (\{2\} \mid \emptyset_j))).(\{1\} \mid (\{2\} \mid \emptyset_j)))a, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j)))b, ((\{2\} \mid \emptyset_j).(\{2\} \mid \emptyset_j))b.c)
\end{aligned}$$

$$((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c) \circ ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c) \rightarrow ((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})a, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c)$$

$$\left( \left( \{ \{ 2 \} \mid \emptyset_j \right) . \{ \{ 2 \} \mid \emptyset_j \} \right) b.c, \left( \{ \emptyset_i \mid \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) . \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) a ) \rightarrow \left( \left( \{ \emptyset_i \mid \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) . \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) a, \left( \{ \{ 2 \} \mid \emptyset_j \} . \{ \{ 2 \} \mid \emptyset_j \} \right) b.c, \left( \{ \emptyset_i \mid \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) . \{ \{ 1 \} \mid \{ \{ \{ 2 \} \mid \emptyset_j \} \} \} \right) a )$$

$$((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\}. \{\{2\} | \emptyset j\}) c) \rightarrow \\ ((\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset j\}\}\}) a, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\}. \{\{2\} | \emptyset j\}) c)$$

$$((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})a) \rightarrow ((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})a)$$

$$\rightarrow ((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b)$$

$$((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\})b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}. \{\{2\} | \emptyset j\})b) \rightarrow ((\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}. \{\{1\} | \{\{2\} | \emptyset j\}\})a, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\})b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}. \{\{2\} | \emptyset j\})b)$$

$$((\{\{2\} \mid \emptyset_j\} \cdot \{\{2\} \mid \emptyset_j\}) b.c, (\{\{2\} \mid \emptyset_j\} \cdot \{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}) c) \rightarrow \\ ((\{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\} \cdot \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}) a, (\{\{2\} \mid \emptyset_j\} \cdot \{\{2\} \mid \emptyset_j\}) b.c, (\{\{2\} \mid \emptyset_j\} \cdot \{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}) c)$$

$$(((\{2\} \mid \emptyset_j).(\{2\} \mid \emptyset_j))b.c, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{\{2\} \mid \emptyset_j\})))b) \rightarrow ((\{\emptyset_i \mid (\{1\} \mid (\{\{2\} \mid \emptyset_j\})))\}.(\{1\} \mid (\{\{2\} \mid \emptyset_j\})))a, ((\{2\} \mid \emptyset_j).(\{2\} \mid \emptyset_j))b.c, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{\{2\} \mid \emptyset_j\})))b)$$

$$(((\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, ((\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c) \rightarrow (((\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})a, ((\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, ((\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c)$$

$$\begin{aligned}
& (((\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a) \circ \\
& \quad (((\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\emptyset i \mid \{\{\{1\} \\
& \mid \{\{\{2\} \mid \emptyset j\}\}\}\})a.c) \rightarrow (((\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}. \\
& \quad (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\})a.c) \\
& \quad (((\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}. \\
& \quad (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a) \rightarrow (((\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}. \\
& \quad (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a)
\end{aligned}$$









$$\begin{aligned}
& ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c) \\
& \rightarrow ((\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c) \\
& ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b) \\
& \rightarrow ((\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b) \\
& ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c) \rightarrow \\
& ((\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid \{\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}\})c, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c)
\end{aligned}$$

$$((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}.\{\{2\} \mid \emptyset\})b.c) \circ ((\{\{2\} \mid \emptyset\}.\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c) \rightarrow ((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})a.c)$$





$$\text{((\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}\}).\{1\} | \{\{2\} | \emptyset j\}\})a, (\{2\} | \emptyset j).\{1\} | \{\{2\} | \emptyset j\}\})b) \rightarrow (\{\{1\} | \{\{2\} | \emptyset j\}\}.\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}a, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}.\{1\} | \{\{2\} | \emptyset j\}\})a, (\{2\} | \emptyset j).\{1\} | \{\{2\} | \emptyset j\}\})b)$$

$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}\}. \{1\} \mid \{\{2\} \mid \emptyset j\}\})a, (\{2\} \mid \emptyset j). \{2\} \mid \emptyset j\})b.c) \rightarrow ((\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}\}a, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}\}. \{1\} \mid \{\{2\} \mid \emptyset j\})a, (\{2\} \mid \emptyset j). \{2\} \mid \emptyset j\})b.c)$$

(({{1} | {{2} | Øj}}).Øi | {{1} | {{2} | Øj}})).{{2} | Øj})c .  
 ((Øi | {{1} | {{2} | Øj}}).{{2} | Øj})c, ((Øi | {{1} | {{2} | Øj}}).Øi | {{1} | {{2} | Øj}}))a.c) → (({{1} | {{2} | Øj}}).Øi | {{1} | {{2} | Øj}})).{{2} | Øj})c, ((Øi | {{1} | {{2} | Øj}}).Øi | {{1} | {{2} | Øj}}))a.c)

$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})a) \rightarrow ((\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\})a, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})a)$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \\ | \emptyset\})c) \rightarrow ((\{1\} \mid \{2\} \mid \emptyset\}). \{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}a, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{1\} \mid \{2\} \mid \emptyset\})\}. \{\emptyset\} \mid \{\{1\} \mid \{2\} \mid \emptyset\}\})\})a) \rightarrow ((\{1\} \mid \{2\} \mid \emptyset\})\}. \{\emptyset\} \mid \{\{1\} \mid \{2\} \mid \emptyset\}\})\})a, (\{\emptyset\} \mid \{\{1\} \mid \{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{1\} \mid \{2\} \mid \emptyset\})\}. \{\emptyset\} \mid \{\{1\} \mid \{2\} \mid \emptyset\}\})\})a)$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{2\} \mid \emptyset\})c, (\{1\} \mid \{2\} \mid \emptyset).(\{1\} \mid \{2\} \mid \emptyset).a.b) \rightarrow ((\{1\} \mid \{2\} \mid \emptyset).\{\emptyset\} \mid \{1\} \mid \{2\} \mid \emptyset).a, (\{\emptyset\} \mid \{1\} \mid \{2\} \mid \emptyset).(\{2\} \mid \emptyset)c, (\{1\} \mid \{2\} \mid \emptyset).\{1\} \mid \{2\} \mid \emptyset)a.b)$$

$$\begin{aligned} & (((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})\text{c}, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})\text{b}) \\ \rightarrow & ((\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\})\text{a}, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})\text{c}, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})\text{b}) \end{aligned}$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}. \{\emptyset\} \mid \{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c) \rightarrow ((\{1\} \mid \{\{2\} \mid \emptyset\}). \{\emptyset\} \mid \{1\} \mid \{\{2\} \mid \emptyset\}\})a, (\{\emptyset\} \mid \{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}. \{\emptyset\} \mid \{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c)$$

$$\begin{aligned} & ((\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\{2\} \mid \emptyset j\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})b) \\ \rightarrow & ((\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})a, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\{2\} \mid \emptyset j\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})b) \end{aligned}$$

$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b) \circ$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c)$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a)$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c)$



$\rightarrow (((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))c)$   
 $\rightarrow (((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\}b,$   
 $(\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))c)$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\}))b) \rightarrow$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\}b, (\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\}))b)$   
 $((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c) \rightarrow ((\{\{1\} |$   
 $\{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))a, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c)$

$$((\{\{2\} | \emptyset j\}. \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\})c, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\})b.c) \rightarrow \\ ((\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}. \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\})a, (\{\{2\} | \emptyset j\}. \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\})c, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\})b.c)$$

$$((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})a, (\{\{2\} | \emptyset j\}.\{\{2\} | \emptyset j\})b.c) \circ ((\{\{2\} | \emptyset j\}.\{\{2\} | \emptyset j\})b.c, (\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\})a.c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset j\}\}.\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\})a, (\{\{2\} | \emptyset j\}.\{\{2\} | \emptyset j\})b.c, (\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}).\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\})a.c)$$

$$\text{((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b,c, (\{\emptyset\} | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}).\{\{1\} | \{\{\{2\} | \emptyset\}\}\})a) \rightarrow ((\{\{1\} | \{\{\{2\} | \emptyset\}\}\}).\{\emptyset\}i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})a, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\}i)b,c, (\{\emptyset\}i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}).\{\{1\} | \{\{\{2\} | \emptyset\}\}\})a)$$









$$((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\})a.b) \rightarrow ((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\})a.b)$$

$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b)$

$$((\{\{1\} | \{\{\{2\} | \emptyset\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})a.b, (\{\{2\} | \emptyset\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})b) \rightarrow ((\{\{1\} | \{\{\{2\} | \emptyset\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})a.b, (\{\{2\} | \emptyset\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})b)$$

$$\begin{aligned} & (((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{1\} \mid \{\{2\} \mid \emptyset_j\}))a.b, ((\{2\} \mid \emptyset_j).\{2\} \mid \emptyset_j)b.c) \\ \rightarrow & (((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{1\} \mid \{\{2\} \mid \emptyset_j\}))a.b, (\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{1\} \mid \{\{2\} \mid \emptyset_j\})a.b, (\{2\} \mid \emptyset_j).\{2\} \mid \emptyset_j)b.c) \end{aligned}$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{1\} | \{\{2\} | \emptyset_j\})). a.b, ((\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{2\} | \emptyset_j\})b) \circ (((\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{1\} | \{\{2\} | \emptyset_j\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c)$$

$$\begin{array}{l} (((\{1\} | \{\{2\} | \emptyset\})}).\{\{2\} | \emptyset\})b, (\{\emptyset\} | \{\{1\} | \{\{2\} | \emptyset\}\})}. \{\{1\} | \{\{2\} | \emptyset\})})a) \\ \rightarrow (((\{1\} | \{\{2\} | \emptyset\})}. \{\{1\} | \{\{2\} | \emptyset\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset\}\}). \{\{2\} | \emptyset\})b, \\ (\{\emptyset\} | \{\{1\} | \{\{2\} | \emptyset\}\})}. \{\{1\} | \{\{2\} | \emptyset\}\})a) \end{array}$$

$$\begin{aligned} & ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c) \\ \rightarrow & ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c) \end{aligned}$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a)$$

$$((\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})b, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}.(\{1\} \mid \{\{\{2\} \mid \emptyset\}\}))a.b) \rightarrow ((\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}.(\{1\} \mid \{\{\{2\} \mid \emptyset\}\}))a.b, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}.(\{2\} \mid \emptyset\})b, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}.(\{1\} \mid \{\{\{2\} \mid \emptyset\}\}))a.b)$$

$$((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b) \rightarrow \\ ((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{1\} | \{\{2\} | \emptyset\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b)$$

$$\begin{aligned} & (((\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}))c) \\ \rightarrow & (((\{1\} | \{\{2\} | \emptyset_j\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}.\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}))c) \end{aligned}$$

$$((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{2\} | \emptyset\}.\{\{1\} | \{\{2\} | \emptyset\}\})b) \rightarrow \\ ((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{1\} | \{\{2\} | \emptyset\}\})a.b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{2\} | \emptyset\}.\{\{1\} | \{\{2\} | \emptyset\}\})b)$$

$$(((\{1\} | \{\{2\} | \emptyset\})\}. \{2\} | \emptyset))b, ((\{2\} | \emptyset). \{2\} | \emptyset)b.c) \rightarrow (((\{1\} | \{\{2\} | \emptyset\})\}. \{1\} | \{\{2\} | \emptyset\})a.b, ((\{1\} | \{\{2\} | \emptyset\})\}. \{2\} | \emptyset))b, ((\{2\} | \emptyset). \{2\} | \emptyset)b.c)$$

$$\begin{aligned} & ((\{\{1\} | \{\{2\} | \emptyset_j\})}. \{\{1\} | \{\{2\} | \emptyset_j\}\}). a.b, ((\{\{2\} | \emptyset_j). \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}). c) \circ ((\{\{2\} \\ & | \emptyset_j). \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}). c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}). a.c) \\ & \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}). \{\{1\} | \{\{2\} | \emptyset_j\}\}). a.b, ((\{\{2\} | \emptyset_j). \{\emptyset_i | \{\{1\} \\ & | \{\{2\} | \emptyset_j\}\}\}). c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}). a.c) \end{aligned}$$

$$| \{ \{ \{ 2 \} | \emptyset j \} , \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} c, (\{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} . \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} ) a) \rightarrow (\{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} . \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} ) a.b, (\{ \{ 2 \} | \emptyset j \} . \{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} ) c, (\{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} . \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} ) a)$$

$$(\{\{2\} | \emptyset j\}. \{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset j\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset j\}\}\}\}. \{\{2\} | \emptyset j\})c) \rightarrow (\{\{\{1\} | \{\{2\} | \emptyset j\}\}\}. \{\{1\} | \{\{2\} | \emptyset j\}\})a.b, (\{\{2\} | \emptyset j\}. \{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset j\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset j\}\}\}\}. \{\{2\} | \emptyset j\})c)$$

$$(((\{2\} \mid \emptyset\}).\{\emptyset i\} \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\})c, (\{1\} \mid \{\{2\} \mid \emptyset j\}).\{\emptyset i\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})c) \\ \rightarrow ((\{1\} \mid \{\{2\} \mid \emptyset j\}).\{1\} \mid \{\{2\} \mid \emptyset j\})a.b, (\{2\} \mid \emptyset j).\{\emptyset i\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})c, (\{1\} \mid \{\{2\} \mid \emptyset j\}).\{\emptyset i\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})c)$$

$$(((\{2\} \mid \emptyset j).(\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}))c, (\{1\} \mid \{\{2\} \mid \emptyset j\}).(\{1\} \mid \{\{2\} \mid \emptyset j\}))a.b) \rightarrow (((\{1\} \mid \{\{2\} \mid \emptyset j\}).(\{1\} \mid \{\{2\} \mid \emptyset j\}))a.b, (\{2\} \mid \emptyset j).(\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}))c, (\{1\} \mid \{\{2\} \mid \emptyset j\}).(\{1\} \mid \{\{2\} \mid \emptyset j\}))a.b)$$

$$\begin{aligned} & ((\{\{2\} \mid \emptyset\}) \cdot \{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))c, (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}) \cdot (\{2\} \mid \emptyset)j)b \\ & \rightarrow ((\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}) \cdot \{1\} \mid (\{\{2\} \mid \emptyset\}))a.b, (\{\{2\} \mid \emptyset\}) \cdot \{\emptyset\}i \mid (\{\{1\} \\ & \mid (\{\{2\} \mid \emptyset\})\})c, (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}) \cdot (\{2\} \mid \emptyset)j)b \end{aligned}$$

$$(((\{2\} \mid \emptyset)_j \cdot (\emptyset_i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}\}))_c, (\{\{2\} \mid \emptyset_j\} \cdot (\emptyset_i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}\}))_c) \\ \rightarrow ((\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}) \cdot (\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}))_{a.b}, (\{\{2\} \mid \emptyset_j\} \cdot (\emptyset_i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}\}))_c, (\{\{2\} \mid \emptyset_j\} \cdot (\emptyset_i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}\}))_c)$$

$$\begin{aligned} & (((\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{2\} \mid \emptyset j\} \cdot \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})b) \\ & \rightarrow ((\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}) \cdot \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})a.b, (\{\{2\} \mid \emptyset j\} \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\})c, (\{\{2\} \mid \emptyset i\} \cdot \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\})b) \end{aligned}$$

$$(((\{2\} | \emptyset).(\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\})))c, ((\{2\} | \emptyset j).(\{2\} | \emptyset j))b.c) \rightarrow \\ (((\{1\} | \{\{2\} | \emptyset j\}).\{1\} | \{\{2\} | \emptyset j\}))a.b, ((\{2\} | \emptyset j).\emptyset i | \{\{1\} | \{\{2\} | \emptyset i\}\})))c, (\{\{2\} | \emptyset i\}.\{\{2\} | \emptyset i\})b.c)$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\})b) \circ ((\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, (\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c)$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, ((\{2\} | \emptyset_j).\{\{2\} | \emptyset_j\})b.c) \circ ((\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}\}.\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, ((\{2\} | \emptyset_j).\{\{2\} | \emptyset_j\})b.c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c)$$

$$\text{(({{2}} \mid \emptyset j).{{2}} \mid \emptyset j)b.c, } (\{\emptyset i \mid \{{{1}} \mid \{{{2}} \mid \emptyset j\}}\}).\{{{1}} \mid \{{{2}} \mid \emptyset j\}})a) \rightarrow \text{(({{1}} \mid \{{{2}} \mid \emptyset j\}}).\{{{1}} \mid \{{{2}} \mid \emptyset j\}})a.b, } (\{{{2}} \mid \emptyset j\}).\{{{2}} \mid \emptyset j\})b.c, (\{\emptyset i \mid \{{{1}} \mid \{{{2}} \mid \emptyset j\}}\}).\{{{1}} \mid \{{{2}} \mid \emptyset j\}})a)$$

$$((\{\{2\} \mid \emptyset_j\} \cdot \{\{2\} \mid \emptyset_j\}) \cdot b, c, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}\} \cdot \{\{2\} \mid \emptyset_j\}) \cdot c) \rightarrow \\ ((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\} \cdot \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}) \cdot a, b, (\{\{2\} \mid \emptyset_j\} \cdot \{\{2\} \mid \emptyset_j\}) \cdot b, c, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}\} \cdot \{\{2\} \mid \emptyset_j\}) \cdot c)$$

$$(((\{2\} \mid \emptyset j).\{2\} \mid \emptyset j))b.c, (\{1\} \mid \{(\{2\} \mid \emptyset j)\}).\{\emptyset i \mid (\{1\} \mid \{(\{2\} \mid \emptyset j)\})\})a) \rightarrow ((\{1\} \mid \{(\{2\} \mid \emptyset j)\}).\{1\} \mid \{(\{2\} \mid \emptyset j)\})a.b, ((\{2\} \mid \emptyset j).\{2\} \mid \emptyset j)b.c, (\{1\} \mid \{(\{2\} \mid \emptyset j)\}).\{\emptyset i \mid (\{1\} \mid \{(\{2\} \mid \emptyset j)\})\})a)$$

$$\rightarrow (((\{1\} | \{\{2\} | \emptyset\}) . \{1\} | \{\{2\} | \emptyset\})) . a.b$$



$$\begin{aligned}
& ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c) \circ ((\{\emptyset_i | \{\{1\} | \\
& \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \rightarrow \\
& ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \\
& \emptyset_j\}\}\}).\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \\
& \qquad \qquad \qquad ((\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} \\
& | \{\{2\} | \emptyset_j\}\})a) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \\
& \emptyset_j\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a) \\
& \qquad \qquad \qquad ((\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} \\
& | \emptyset_j\})c) \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c, (\{\emptyset_i \\
& | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{2\} | \emptyset_j\})c)
\end{aligned}$$



$\{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\} a, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}) c) \rightarrow (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\{2\} | \emptyset_j\} b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}) a, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}) c)$   
 $\{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\} a, (\{\{2\} | \emptyset_j\}. \{\{1\} | \{\{2\} | \emptyset_j\}\}) b) \rightarrow (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\{2\} | \emptyset_j\} b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}) a, (\{\{2\} | \emptyset_j\}. \{\{1\} | \{\{2\} | \emptyset_j\}\}) b)$   
 $\{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\} a, (\{\{2\} | \emptyset_j\}. \{\{2\} | \emptyset_j\}) b.c) \rightarrow (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\{2\} | \emptyset_j\} b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}. \{\emptyset_i | \{\{\{1\} | \{\{2\} | \emptyset_j\}\}\}\}) a, (\{\{2\} | \emptyset_j\}. \{\{2\} | \emptyset_j\}) b.c)$

$$\begin{aligned}
& ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}\})c) \circ ((\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \\
& \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})a.c) \\
& ((\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\{1\} | \{\{2\} | \emptyset_j\}\})a) \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\{1\} | \{\{2\} | \emptyset_j\}\})a) \\
& ((\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\{2\} | \emptyset_j\})c) \quad \rightarrow ((\{\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}. \{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}. \{\{2\} | \emptyset_j\})c)
\end{aligned}$$



$$\begin{aligned}
& \rightarrow ((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}.(\{2\} | \emptyset_j))b, (\{\{2\} | \emptyset_j\}.(\emptyset_i | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}))c) \\
& \quad | (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}.(\{2\} | \emptyset_j))b, (\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b, (\{\{2\} | \emptyset_j\}.(\emptyset_i \\
& \quad | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}))c) \\
& \quad ((\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b, (\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b) \rightarrow \\
& \quad ((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}.(\{2\} | \emptyset_j))b, (\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b, (\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} \\
& \quad | \emptyset_j\}\}))b) \\
& \quad ((\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b, (\{\{2\} | \emptyset_j\}.(\{2\} | \emptyset_j))b.c) \rightarrow ((\{\{1\} \\
& \quad | \{\{\{2\} | \emptyset_j\}\}\}.(\{2\} | \emptyset_j))b, (\{\{2\} | \emptyset_j\}.(\{1\} | \{\{\{2\} | \emptyset_j\}\}))b, (\{\{2\} | \emptyset_j\}.(\{2\} | \emptyset_j))b.c)
\end{aligned}$$

$$\begin{aligned}
& (((\{2\} | \emptyset j).(\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\}))c, (\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a) \\
& \quad ((\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\emptyset i | (\{\{1\} \\
& | (\{\{2\} | \emptyset j\})\})\})a.c) \rightarrow (((\{2\} | \emptyset j).(\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\}))c, (\{\emptyset i | (\{\{1\} | (\{\{2\} \\
& | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\})a.c) \\
& \quad (((\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} \\
& | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a) \rightarrow (((\{2\} | \emptyset j).(\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\}))c, (\{\emptyset i | (\{\{1\} | (\{\{2\} \\
& | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a) \\
& \quad (((\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} \\
& | \emptyset j\})\})\}.(\{2\} | \emptyset j)\})c) \rightarrow (((\{2\} | \emptyset j).(\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\}))c, (\{\emptyset i | (\{\{1\} | (\{\{2\} \\
& | \emptyset j\})\})\}.(\{1\} | (\{\{2\} | \emptyset j\})\})a, (\{\emptyset i | (\{\{1\} | (\{\{2\} | \emptyset j\})\})\}.(\{2\} | \emptyset j\})c)
\end{aligned}$$





$$\begin{aligned}
& (((\{2\} \mid \emptyset j) \cdot (\emptyset i \mid (\{1\} \mid (\{\{2\} \mid \emptyset j\}))))c, (\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b) \circ ((\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j)))a.c) \rightarrow ((\{2\} \mid \emptyset j) \cdot (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j)))a.c) \\
& \qquad \qquad \qquad (((\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{1\} \mid (\{2\} \mid \emptyset j))a) \rightarrow ((\{2\} \mid \emptyset j) \cdot (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{1\} \mid (\{2\} \mid \emptyset j))a) \\
& \qquad \qquad \qquad (((\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{2\} \mid \emptyset j)c) \rightarrow ((\{2\} \mid \emptyset j) \cdot (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{1\} \mid (\{2\} \mid \emptyset j)) \cdot (\{2\} \mid \emptyset j)b, (\emptyset i \mid (\{1\} \mid (\{2\} \mid \emptyset j))) \cdot (\{2\} \mid \emptyset j)c)
\end{aligned}$$

$$(((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, (\{1\} | \{\{2\} | \emptyset_j\}).\{\emptyset_i | \{1\} | \{\{2\} | \emptyset_j\}\})a) \rightarrow ((\{2\} | \emptyset_j).\{\emptyset_i | \{1\} | \{\{2\} | \emptyset_j\}\})c, (\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, (\{1\} | \{\{2\} | \emptyset_j\}).\{\emptyset_i | \{1\} | \{\{2\} | \emptyset_j\}\})a)$$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{2\} \mid \emptyset_j\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b) \rightarrow ((\{\{2\} \mid \emptyset_j\}.\{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\})c, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{2\} \mid \emptyset_j\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b)$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b) \rightarrow \\ ((\{\{2\} | \emptyset_j\}.\{\emptyset_i | (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})\})c, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b)$$

$$\rightarrow (((\{2\} \mid \emptyset_j) \cdot (\{1\} \mid \{2\} \mid \emptyset_j)) \cdot ((\{2\} \mid \emptyset_j) \cdot (\{1\} \mid \{2\} \mid \emptyset_j))) \cdot ((\{2\} \mid \emptyset_j) \cdot (\{1\} \mid \{2\} \mid \emptyset_j))$$

$$(((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, (\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_j\}))b) \rightarrow \\ ((\{2\} | \emptyset_j).\{\emptyset_i | (\{1\} | \{\{2\} | \emptyset_j\})\})c, (\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, (\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_j\}))b)$$

$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c) \rightarrow ((\{\{2\} | \emptyset_j\}.\{\emptyset_i | (\{\{1\} | \{\{2\} | \emptyset_j\}\})\})c, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c)$

$$\begin{aligned} & (((\{2\} \mid \emptyset j). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\})c, (\{\{2\} \mid \emptyset j). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\})c) \circ ((\{2\} \\ & \mid \emptyset j). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\})c, (\{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\}). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\})a.c) \\ & \quad \rightarrow ((\{\{2\} \mid \emptyset j). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset j)\})\})c, (\{\{2\} \mid \emptyset j). \{\emptyset i \mid (\{\{1\} \mid \\ & \quad (\{\{2\} \mid \emptyset i)\})\})c, (\{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset i)\})\}). \{\emptyset i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset i)\})\})a.c) \end{aligned}$$

$$| \{ \{ \{ 2 \} | \emptyset j \} \}. \{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} \} c, (\{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \}. \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \}) a) \rightarrow (\{ \{ \{ 2 \} | \emptyset j \} \}. \{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset j \} \} \} \} \} \} c, (\{ \{ 2 \} | \emptyset j \} \}. \{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset i \} \} \} \} \} \} c, (\{ \emptyset i | \{ \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset i \} \} \} \} \} \} \{ \{ 1 \} | \{ \{ \{ 2 \} | \emptyset i \} \} \}) a)$$

$$| \emptyset j) c) \rightarrow (((\{2\} | \emptyset j). \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\}). \{\{2\} | \emptyset j\})c), (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset j\}\}\}\}. \{\{2\} | \emptyset i\})c)$$

$$(((\{2\} \mid \emptyset j). \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, ((\{2\} \mid \emptyset j). \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, ((\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}\}\}\})a) \rightarrow (((\{2\} \mid \emptyset j). \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{2\} \mid \emptyset j). \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}\}\}\})c, ((\{2\} \mid \emptyset j). \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}\}\}\})c, ((\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset i\}\}\}\}\})a)$$

$$((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))\).c, ((\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})a.b) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))\).c, ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))a.b)$$

$$\begin{aligned} & (((\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}, \{\{2\} \mid \emptyset j\})b) \\ & \rightarrow (((\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{2\} \mid \emptyset j\} \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\}c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}, \{\{2\} \mid \emptyset j\})b) \end{aligned}$$

$$\begin{array}{ccc} (((\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c) \\ \rightarrow (((\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c, (\{\{2\} \mid \emptyset j) \cdot \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}\}\})c) \end{array}$$

$$\begin{aligned}
& (((\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})b) \\
\rightarrow & (((\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid \\
& (\{\{2\} \mid \emptyset_j)\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})b) \\
& (((\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\{2\} \mid \emptyset_j\})b.c) \rightarrow \\
& (((\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset_j)\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\emptyset_i \mid (\{\{1\} \mid (\{\{2\} \mid \\
& \emptyset_j\})\})\})c, (\{\{2\} \mid \emptyset_j) \cdot \{\{2\} \mid \emptyset_j\})b.c)
\end{aligned}$$

$$((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))c, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c) \circ ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))\}.(\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))a.c) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))c, (\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))\}.(\{\emptyset\} \mid (\{\{1\} \mid (\{\{2\} \mid \emptyset\})\}))a.c)$$





$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{1\} \mid \{\{2\} \mid \emptyset j\}\}).a, (\{2\} \mid \emptyset j).\{2\} \mid \emptyset j))b.c) \rightarrow ((\{2\} \mid \emptyset j).\{1\} \mid \{\{2\} \mid \emptyset j\}).b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{1\} \mid \{\{2\} \mid \emptyset j\}).a, (\{2\} \mid \emptyset j).\{2\} \mid \emptyset j)b.c)$$

$((\{\{2\} | \emptyset\}).\{\{1\} | \{\{\{2\} | \emptyset\}\}\})b, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}. \{\{2\} | \emptyset\})c) \circ ((\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}. \{\{2\} | \emptyset\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}. \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}\})a.c) \rightarrow ((\{\{2\} | \emptyset\}. \{\{1\} | \{\{\{2\} | \emptyset\}\}\})b, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}. \{\{2\} | \emptyset\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}. \{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}\})a.c)$

$$| \{ \{ \{ 2 \} | \emptyset j \} \} \} ) a \rightarrow ( ( \{ \{ 2 \} | \emptyset j \} . \{ 1 \} | \{ \{ 2 \} | \emptyset j \} \} ) b, ( \{ \emptyset i | \{ \{ 1 \} | \{ \{ 2 \} | \emptyset j \} \} \} . \{ 2 \} | \emptyset j \} ) c, ( \{ \emptyset i | \{ \{ 1 \} | \{ \{ 2 \} | \emptyset j \} \} \} ) . \{ 1 \}$$

$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{\{2\} \mid \emptyset j\})c) \rightarrow ((\{\{2\} \mid \emptyset j\}.\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}).b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}).\{\{2\} \mid \emptyset j\})c)$$

$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{1\} \mid \{\{2\} \mid \emptyset j\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\})a) \rightarrow ((\{\{2\} \mid \emptyset j\}. \{1\} \mid \{\{2\} \mid \emptyset j\}\}). b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{1\} \mid \{\{2\} \mid \emptyset j\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\})a)$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\}).c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).b, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{2\} \mid \emptyset\}).c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b)$$

$$\begin{aligned} & ((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})b) \\ \rightarrow & ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\})b, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})b) \end{aligned}$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})c) \rightarrow ((\{2\} \mid \emptyset\}.\{1\} \mid \{\{2\} \mid \emptyset\}\})b, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).\{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}.\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})c)$$

$$\begin{aligned} & ((\{\emptyset\} \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}.\{\{1\} \mid \{\{2\} \mid \emptyset\}\})b) \\ \rightarrow & ((\{\{2\} \mid \emptyset\}.\{\{1\} \mid \{\{2\} \mid \emptyset\}\})b, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\{2\} \mid \emptyset\}.\{\{1\} \mid \{\{2\} \mid \emptyset\}\})b) \end{aligned}$$

$$((\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}. \{2\} \mid \emptyset\})b.c) \rightarrow \\ ((\{2\} \mid \emptyset\}. \{1\} \mid \{\{2\} \mid \emptyset\})\}b, (\{\emptyset\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\})\}. \{2\} \mid \emptyset\})c, (\{2\} \mid \emptyset\}. \{2\} \mid \emptyset\})b.c)$$

$$(((\{2\} | \emptyset_j).(\{1\} | (\{\{2\} | \emptyset_j\})))b, (\{1\} | (\{\{2\} | \emptyset_j\})).\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\})))a) \circ ((\{1\} | (\{\{2\} | \emptyset_j\})).\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\})))a, (\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\}))).\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\})))a.c) \rightarrow (((\{2\} | \emptyset_j).(\{1\} | (\{\{2\} | \emptyset_j\})))b, (\{1\} | (\{\{2\} | \emptyset_j\})).\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\})))a, (\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\}))).\emptyset_i | (\{1\} | (\{\{2\} | \emptyset_j\})))a.c)$$

$$((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a, (\{\emptyset_i | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a) \rightarrow ((\{\{2\} | \emptyset_j\}. \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a, (\{\emptyset_i | \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a)$$



$$((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{2\} | \emptyset_j)j.b) \rightarrow ((\{\{2\} | \emptyset_j\}. \{1\} | \{\{\{2\} | \emptyset_j\}\}\})b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{1\} | \{\{\{2\} | \emptyset_j\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{2\} | \emptyset_j)b)$$

$$(((\{1\} | \{\{2\} | \emptyset\})\}).\{1\} | \{\{2\} | \emptyset\})\}.a.b, ((\{2\} | \emptyset\).\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})c) \rightarrow ((\{2\} | \emptyset\).\{1\} | \{\{2\} | \emptyset\})\}.b, ((\{1\} | \{\{2\} | \emptyset\})\).\{1\} | \{\{2\} | \emptyset\})\}.a.b, ((\{2\} | \emptyset\).\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})c)$$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\{2\} \mid \emptyset_j\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})b) \rightarrow ((\{\{2\} \mid \emptyset_j\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\{2\} \mid \emptyset_j\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})b)$$

$$\rightarrow (((\{2\} \mid \emptyset).(\{1\} \mid \{\{2\} \mid \emptyset\})).(\{1\} \mid \{\{2\} \mid \emptyset\}))a.b, ((\{2\} \mid \emptyset).(\{2\} \mid \emptyset))b.c$$

$$((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\})b, (\{1\} | \{\{2\} | \emptyset j\}). \{2\} | \emptyset j))b) \circ ((\{1\} | \{2\} | \emptyset j). \{2\} | \emptyset j)b, (\emptyset i | \{1\} | \{\{2\} | \emptyset j\}). \{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\})a.c) \rightarrow ((\{2\} | \emptyset j). \{1\} | \{\{2\} | \emptyset j\})b, (\{1\} | \{\{2\} | \emptyset j\}). \{2\} | \emptyset j)b, (\emptyset i | \{1\} | \{\{2\} | \emptyset j\}). \{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\})a.c)$$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a) \rightarrow ((\{\{2\} | \emptyset_j\}.\{\{1\} | \{\{2\} | \emptyset_j\}\})b, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{2\} | \emptyset_j\})b, (\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a)$$

$$\begin{aligned} & ((\{\{1\} | \{\{\{2\} | \emptyset\}\}\}, \{\{2\} | \emptyset\})b, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}, \{\{2\} | \emptyset\})c) \\ \rightarrow & ((\{\{\{2\} | \emptyset\}\}, \{\{1\} | \{\{\{2\} | \emptyset\}\}\})b, (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}, \{\{2\} | \emptyset\})b, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}, \{\{2\} | \emptyset\})c) \end{aligned}$$

$$((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset | \{\{1\} | \{\{2\} | \emptyset\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}.\{\{1\} | \{\{2\} | \emptyset\}\})b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\{2\} | \emptyset\})b, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset | \{\{1\} | \{\{2\} | \emptyset\}\}\})a)$$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{2\} \mid \emptyset\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b) \rightarrow ((\{\{2\} \mid \emptyset\}.\{\{1\} \mid \{\{2\} \mid \emptyset\}\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{2\} \mid \emptyset\})b, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b)$$

$$(((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, ((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b) \rightarrow \\ (((\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_j\}))b, ((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, ((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b)$$

$$\begin{aligned} & (((\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\})b, (\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))c) \\ \rightarrow & ((\{\{2\} | \emptyset_j\}.\{1\} | \{\{2\} | \emptyset_j\})b, (\{1\} | \{\{2\} | \emptyset_j\}).\{\{2\} | \emptyset_j\}b, (\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\}))c) \end{aligned}$$

$$(((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, ((\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_j\}))b) \rightarrow \\ (((\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_j\})b, ((\{1\} | \{\{2\} | \emptyset_j\}).\{2\} | \emptyset_j)b, ((\{2\} | \emptyset_j).\{1\} | \{\{2\} | \emptyset_i\}))b)$$

$$(((\{1\} | \{\{2\} | \emptyset j\})}. \{2\} | \emptyset j))b, ((\{2\} | \emptyset j). \{2\} | \emptyset j))b.c) \rightarrow (((\{2\} | \emptyset j). \{1\} | \{\{2\} | \emptyset j\})}. \{2\} | \emptyset j)b, ((\{1\} | \{\{2\} | \emptyset j\}). \{2\} | \emptyset j)b, ((\{2\} | \emptyset j). \{2\} | \emptyset j)b.c)$$

$$((\{\{2\} | \emptyset j\}. \{1\} | \{\{2\} | \emptyset j\}))b, (\{\{2\} | \emptyset j\}. \{1\} | \{\{2\} | \emptyset j\}))b) \circ ((\{\{2\} | \emptyset j\}. \{1\} | \{\{2\} | \emptyset j\}))b, (\{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\}). \{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\})a.c) \rightarrow ((\{\{2\} | \emptyset j\}. \{1\} | \{\{2\} | \emptyset j\}))b, (\{\{2\} | \emptyset j\}. \{1\} | \{\{2\} | \emptyset j\}))b, (\{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\}). \{\emptyset i | \{1\} | \{\{2\} | \emptyset j\}\})a.c)$$

$$\begin{aligned}
& ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c) \circ ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, \\
& (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}. \{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) a.c) \rightarrow ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) a.c) \\
& ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}). \{\{1\} | \{\{2\} | \emptyset j\}\}) a) \rightarrow ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) . \{\{1\} | \{\{2\} | \emptyset j\}\}) a) \\
& ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}). \{\{2\} | \emptyset j\}) c) \rightarrow \\
& ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) . \{\{2\} | \emptyset j\}) c) \\
& ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}). \{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) a) \rightarrow ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}) . \{\emptyset i | \{\{1\} | \{\{2\} | \emptyset j\}\}\}) a) \\
& ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}). \{\{1\} | \{\{2\} | \emptyset j\}\}) a.b) \\
& \rightarrow ((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}) . \{\{1\} | \{\{2\} | \emptyset j\}\}) a.b)
\end{aligned}$$



$$((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}\}. \{\{2\} \mid \emptyset\})c) \circ ((\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}\}. \{\{2\} \mid \emptyset\})c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}\}a.c) \rightarrow ((\{\{2\} \mid \emptyset\}. \{\{2\} \mid \emptyset\})b.c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}. \{\{2\} \mid \emptyset\})c, (\{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}. \{\emptyset i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}\}a.c)$$

$$((\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})a) \rightarrow ((\{\{2\} \mid \emptyset j\}. \{\{2\} \mid \emptyset j\})b.c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\{2\} \mid \emptyset j\})c, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\})a)$$

$$((\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c, (\{\emptyset\} \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset\}\}\}\}).\{\{2\} \mid \emptyset\})c)$$

$$\begin{aligned} & (((\{2\} \mid \emptyset j) \cdot \{2\} \mid \emptyset j) b.c, (\{1\} \mid \{\{2\} \mid \emptyset j\}) \cdot \emptyset i \mid \{1\} \mid \{\{2\} \mid \emptyset j\}) a) \circ ((\{1\} \mid \{\{2\} \mid \emptyset j\}) \cdot \emptyset i \mid \{1\} \mid \{\{2\} \mid \emptyset j\}) a.c \\ & \quad \rightarrow ((\{2\} \mid \emptyset j) \cdot \{2\} \mid \emptyset j) b.c, (\{1\} \mid \{\{2\} \mid \emptyset j\}) \cdot \emptyset i \mid \{1\} \mid \{\{2\} \mid \emptyset j\}) a, (\emptyset i \mid \{1\} \mid \{\{2\} \mid \emptyset j\}) \cdot \emptyset i \mid \{1\} \mid \{\{2\} \mid \emptyset j\}) a.c \end{aligned}$$

$$((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\}\})a, (\{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a, (\{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a) \rightarrow ((\{\{2\} | \emptyset_j\}. \{\{2\} | \emptyset_j\})b.c, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}. \{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a, (\{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a, (\{\emptyset_i | \{\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}\})a)$$

$$((\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset\}\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset\}\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset\}\}\}\})a, (\{\{1\} | \{\{2\} | \emptyset\}\}).\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset\}\}\}\})a)$$

$$(((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\})a, ((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b) \rightarrow ((\{2\} \mid \emptyset_j).\{\{2\} \mid \emptyset_j\})b.c, ((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{\emptyset_i \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\})a, ((\{1\} \mid \{\{2\} \mid \emptyset_j\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b)$$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}\})a, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{2\} \mid \{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\})b) \rightarrow ((\{\{2\} \mid \emptyset_j\}).\{\{2\} \mid \emptyset_j\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}\})a, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{2\} \mid \emptyset_j\})b)$$

$$\left( \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \cdot \left\{ \emptyset_i \mid \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \right) \right) a, \left( \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \cdot \left\{ \emptyset_i \mid \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \right) \right) c \right) \\ \rightarrow \left( \left( \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \cdot \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right) b, c, \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \cdot \left\{ \emptyset_i \mid \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \right) \right) a, \left( \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \cdot \left\{ \emptyset_i \mid \left( \left\{ \left\{ 1 \right\} \mid \left\{ \left\{ 2 \right\} \mid \emptyset_j \right\} \right\} \right) \right) c \right)$$

$$\begin{array}{ll} ((\{\{1\} | \{\{2\} | \emptyset j\}\}).\{\emptyset i | \{\{\{1\} | \{\{2\} | \emptyset j\}\}\}\})a, (\{\{2\} | \emptyset j\}.\{\{1\} | \{\{2\} | \\ \emptyset j\}\})b) & \rightarrow ((\{\{2\} | \emptyset j\}.\{\{2\} | \emptyset j\})b.c, (\{\{1\} | \{\{2\} | \emptyset j\}\}.\{\emptyset i | \{\{\{1\} | \{\{2\} | \\ \emptyset j\}\}\}\})a, (\{\{2\} | \emptyset j\}.\{\{1\} | \{\{2\} | \emptyset j\}\})b) \end{array}$$

$$\begin{array}{l} (((\{1\} \mid \{\{2\} \mid \emptyset\}), \{\emptyset\}, \{(\{1\} \mid \{\{2\} \mid \emptyset\})\}), \{(\{2\} \mid \emptyset\}), \{(\{2\} \mid \emptyset\}), b.c) \\ \qquad \qquad \qquad \rightarrow ((\{2\} \mid \emptyset), \{(\{2\} \mid \emptyset)\}, b.c, (\{1\} \mid \{\{2\} \mid \emptyset\}), \{\emptyset\}, \{(\{1\} \mid \{\{2\} \mid \emptyset\})\}), a, (\{2\} \mid \emptyset), \{(\{2\} \mid \emptyset)\}, b.c) \end{array}$$

$$((\{\{2\} \mid \emptyset j\}. \{\{2\} \mid \emptyset j\}) b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}) a.b) \circ ((\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}) a.b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}) a.c) \rightarrow ((\{\{2\} \mid \emptyset j\}. \{\{2\} \mid \emptyset j\}) b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset j\}\}. \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}) a.b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}. \{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset j\}\}\}) a.c)$$

$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\})a) \rightarrow ((\{\{2\} \mid \emptyset_j\}. \{\{2\} \mid \emptyset_j\})b.c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\})a.b, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\})a)$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}\}. \{\{2\} \mid \emptyset_j\}\}).\{\{2\} \mid \emptyset_j\}c) \rightarrow ((\{\{2\} \mid \emptyset_j\}. \{\{2\} \mid \emptyset_j\})b.c, (\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\})a.b, (\{\emptyset_i \mid \{\{\{1\} \mid \{\{\{2\} \mid \emptyset_j\}\}\}\}. \{\{2\} \mid \emptyset_j\}\})c)$$

$$\begin{array}{ccc} (((\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{1\} | \{\{\{2\} | \emptyset_j\}\})).a.b, (((\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{1\} | \{\{\{2\} | \emptyset_j\}\})a.b) & \rightarrow & ((\{\{2\} | \emptyset_j\}.(\{2\} | \emptyset_j)).b.c, (\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{1\} | \{\{\{2\} | \emptyset_j\}\})a.b, \\ ((\{1\} | \{\{\{2\} | \emptyset_j\}\}).\{1\} | \{\{\{2\} | \emptyset_j\}\})a.b) & & \end{array}$$

$((\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\{2\} | \emptyset_j\})b) \rightarrow ((\{\{2\} | \emptyset_j\}. \{\{2\} | \emptyset_j\})b.c, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\{1\} | \{\{\{2\} | \emptyset_j\}\}\})a.b, (\{\{1\} | \{\{\{2\} | \emptyset_j\}\}\}. \{\{2\} | \emptyset_j\})b)$

$$((\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, ((\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c) \rightarrow ((\{\{2\} | \emptyset_j\}.\{\{2\} | \emptyset_j\})b.c, (\{\{1\} | \{\{2\} | \emptyset_j\}\}).\{\{1\} | \{\{2\} | \emptyset_j\}\})a.b, ((\{\{2\} | \emptyset_j\}.\{\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}\})c)$$

$$((\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\{2\} \mid \emptyset_j\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})b) \rightarrow ((\{\{2\} \mid \emptyset_j\}.\{\{2\} \mid \emptyset_j\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\}).\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})a.b, (\{\{2\} \mid \emptyset_j\}.\{\{1\} \mid \{\{2\} \mid \emptyset_j\}\})b)$$

$$\rightarrow (((\{2\} | \emptyset_j).(\{2\} | \emptyset_j))b.c, (\{1\} | \{2\} | \emptyset_j)).((\{1\} | \{2\} | \emptyset_j))a.b, ((\{2\} | \emptyset_j).(\{2\} | \emptyset_j))b.c$$

$((\{2\} \mid \emptyset\}).(\{2\} \mid \emptyset\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).(\{2\} \mid \emptyset\})b) \circ ((\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).(\{2\} \mid \emptyset\})b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).(\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})a.c) \rightarrow ((\{2\} \mid \emptyset\}).(\{2\} \mid \emptyset\})b.c, (\{\{1\} \mid \{\{2\} \mid \emptyset\}\}).(\{2\} \mid \emptyset\})b, (\{\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\}).(\emptyset i \mid \{\{1\} \mid \{\{2\} \mid \emptyset\}\}\})a.c)$

$$\begin{aligned}
& ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c) \circ ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} \\
& | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}\}.\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})a.c) \rightarrow ((\{\{2\} \\
& | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}.\emptyset i | \\
& \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})a.c) \\
& ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}.\{\{1\} \\
& | \{\{\{2\} | \emptyset\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, \\
& (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}.\{\{1\} | \{\{\{2\} | \emptyset\}\}\})a) \\
& ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}.\{\{2\} \\
& | \emptyset\})c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, \\
& (\{\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\}.\{\{2\} | \emptyset\})c) \\
& ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}.\emptyset i | \{\{\{1\} \\
& | \{\{\{2\} | \emptyset\}\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, \\
& (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}.\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})a) \\
& ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}.\{\{1\} | \{\{\{2\} \\
& | \emptyset\}\}\})a.b) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, ((\{\{2\} | \emptyset\}).\emptyset i | \{\{\{1\} | \{\{\{2\} | \emptyset\}\}\}\})c, \\
& (\{\{1\} | \{\{\{2\} | \emptyset\}\}\}.\{\{1\} | \{\{\{2\} | \emptyset\}\}\})a.b)
\end{aligned}$$

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(({{2} | Øj}.Øi | {{1} | {{2} | Øj}}})c, (({1} | {{2} | Øj}}).{{2} | Øj})b)
→ (({{2} | Øj}.{{2} | Øj})b.c, ({2} | Øj).Øi | {{1} | {{2} | Øj}}})c,
({1} | {{2} | Øj}}).{{2} | Øj})b)

(({{2} | Øj}.Øi | {{1} | {{2} | Øj}}})c, (({2} | Øj).Øi | {{1} | {{2} | Øj}}) |
Øj)).c) → (({{2} | Øj}.{{2} | Øj})b.c, ({2} | Øj).Øi | {{1} | {{2} | Øj}}})c,
({2} | Øj).Øi | {{1} | {{2} | Øj}}})c

(({{2} | Øj}.Øi | {{1} | {{2} | Øj}}})c, (({2} | Øj).{{1} | {{2} | Øj}})b)
→ (({{2} | Øj}.{{2} | Øj})b.c, ({2} | Øj).Øi | {{1} | {{2} | Øj}}})c,
({2} | Øj).{{1} | {{2} | Øj}}})b)

(({{2} | Øj}.Øi | {{1} | {{2} | Øj}}})c, (({2} | Øj).{{2} | Øj})b.c) →
(({{2} | Øj}.{{2} | Øj})b.c, ({2} | Øj).Øi | {{1} | {{2} | Øj}}})c, ({2} | Øj).{{2} | Øj})b.c)

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$$((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b) \circ ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b, ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b, ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b.c) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b, (\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b, ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b, ((\{\{2\} \mid \emptyset\}).\{\{1\} \mid (\{\{2\} \mid \emptyset\})\})b.c) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c$$

$$\text{((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\emptyset i\} | \{\{1\} | \{\{2\} | \emptyset j\}\}) c). \{\{1\} | \{\{2\} | \emptyset j\}\}) a) \rightarrow \text{((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\}) b. c, (\{\{2\} | \emptyset j\}. \{\{1\} | \{\{2\} | \emptyset j\}\}) b, (\{\emptyset i\} | \{\{1\} | \{\{2\} | \emptyset j\}\}) c). \{\{1\} | \{\{2\} | \emptyset j\}\}) a)}$$

$$(((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j))))b, ((\{1\} \mid (\{2\} \mid \emptyset_j))).(\emptyset_i \mid (\{1\} \mid (\{2\} \mid \emptyset_j))))a) \rightarrow (((\{2\} \mid \emptyset_j).(\{2\} \mid \emptyset_j))b.c, ((\{2\} \mid \emptyset_j).(\{1\} \mid (\{2\} \mid \emptyset_j))))b, ((\{1\} \mid (\{2\} \mid \emptyset_j))).(\emptyset_i \mid (\{1\} \mid (\{2\} \mid \emptyset_j))))a)$$

$$((\{\{2\} \mid \emptyset\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\}))b, (\{1\} \mid \{\{2\} \mid \emptyset\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b) \rightarrow ((\{\{2\} \mid \emptyset\}).\{\{2\} \mid \emptyset\})b.c, (\{2\} \mid \emptyset).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})b, (\{1\} \mid \{\{2\} \mid \emptyset\}).\{\{1\} \mid \{\{2\} \mid \emptyset\}\})a.b)$$

$$((\{\{2\} \mid \emptyset j\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}) b, (\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}. \{\{2\} \mid \emptyset j\}) b) \rightarrow \\ ((\{\{2\} \mid \emptyset j\}. \{\{2\} \mid \emptyset j\}) b.c, (\{\{2\} \mid \emptyset j\}. \{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}) b, (\{\{1\} \mid \{\{\{2\} \mid \emptyset j\}\}\}. \{\{2\} \mid \emptyset j\}) b)$$

$$\rightarrow (((\{2\} | \emptyset_j).(\{1\} | \{\{2\} | \emptyset_j\}))b, ((\{2\} | \emptyset_j).(\emptyset_i | \{\{1\} | \{\{2\} | \emptyset_j\}\}))c) \\ \{ \{2\} | \emptyset_j\})\}))c)$$

$$((\{\{2\} | \emptyset j\}. \{\{1\} | \{\{\{2\} | \emptyset j\}\}\})b, (\{\{2\} | \emptyset j\}. \{\{1\} | \{\{\{2\} | \emptyset j\}\}\})b) \rightarrow \\ ((\{\{2\} | \emptyset j\}. \{\{2\} | \emptyset j\})b.c, (\{\{2\} | \emptyset j\}. \{\{1\} | \{\{\{2\} | \emptyset j\}\}\})b, (\{\{2\} | \emptyset j\}. \{\{1\} | \{\{\{2\} | \emptyset j\}\}\})b)$$

$$((\{\{2\} | \emptyset\}).\{\{1\} | \{\{2\} | \emptyset\}\}))b, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{1\} | \{\{2\} | \emptyset\}\}))b, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c)$$

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$((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c) \circ ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\}. \emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})a.c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\})a.c)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\}. \{\{1\} | \{\{2\} | \emptyset\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\}. \{\{1\} | \{\{2\} | \emptyset\}\}\})a)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\}. \{\{2\} | \emptyset\})c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\}\}. \{\{2\} | \emptyset\})c)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})a) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})a)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \{\{1\} | \{\{2\} | \emptyset\}\}\})a.b) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \{\{1\} | \{\{2\} | \emptyset\}\}\})a.b)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \{\{2\} | \emptyset\})b) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{1\} | \{\{2\} | \emptyset\}\}\}. \{\{2\} | \emptyset\})b)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\emptyset i | \{\{1\} | \{\{2\} | \emptyset\}\}\})c)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{1\} | \{\{2\} | \emptyset\}\}\})b) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{1\} | \{\{2\} | \emptyset\}\}\})b)$   
 $((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c) \rightarrow ((\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c, (\{\{2\} | \emptyset\}).\{\{2\} | \emptyset\})b.c)$

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