```
\langle \{\}, \{X,Y\}, id, \{[a]\langle [b]f_n^C\langle X, \overline{b}\rangle, Y\rangle \approx_? [b]\langle [a]f_n^C\langle \overline{a}, X\rangle, Y\rangle \}\rangle
                                                                                                                                                     (\approx_? [\mathbf{ab}])
                                                                             \langle \{\},\ \{X,Y\},\ id,\ \{\langle [b]f_n^C\langle X,\bar{b}\rangle,Y\rangle\approx_? \langle [b]f_n^C\langle\bar{b},(a\,b).X\rangle,(a\,b).Y\rangle,\ a\,\#_?\,\langle [a]f_n^C\langle\bar{a},X\rangle,Y\rangle\}\rangle
                                                                                                                                                    (\approx_? \mathbf{pair})
                                                                              \langle \{\},\ \{X,Y\},\ id,\ \{[b]f_n^C\langle X,\overline{b}\rangle\approx_? [b]f_n^C\langle \overline{b},(a\,b).X\rangle,\ Y\approx_? (a\,b).Y,\ a\,\#_?\,\langle [a]f_n^C\langle \overline{a},X\rangle,Y\rangle\}\rangle
                                                                                                                                                      (\approx_? [\mathbf{aa}])
                                                                                   \langle \{\},\ \{X,Y\},\ id,\ \{f_n^C\langle X,\bar{b}\rangle\approx_? f_n^C\langle \bar{b},(a\,b).X\rangle,\ Y\approx_? (a\,b).Y,\ a\,\#_?\,\langle [a]f_n^C\langle \bar{a},X\rangle,Y\rangle\}\rangle
                                                                                                             (\approx_? \mathbf{C})
\langle \{\}, \{X,Y\}, id, \{X \approx_? \overline{b}, \overline{b} \approx_? (ab).X, Y \approx_? (ab).Y, a \#_? \langle [a]f_n^C \langle \overline{a}, X \rangle, Y \rangle \} \rangle
                                                                                                                                                                                 \{\{\}, \{X,Y\}, id, \{X \approx_? (ab).X, \overline{b} \approx_? \overline{b}, Y \approx_? (ab).Y, a \#_? \langle [a]f_n^C \langle \overline{a}, X \rangle, Y \rangle\} \}
                                                                                                                                                                                                                                                 (\approx_? \mathbf{inv})
                                                                              (\perp)
                                                                                                                                                                                  \langle \{\}, \{X,Y\}, id, \{\overline{b} \approx_? \overline{b}, Y \approx_? (ab).Y, a\#_? \langle [a]f_n^C \langle \overline{a}, X \rangle, Y \rangle, (ab).X \approx_? X \} \rangle
                                                                                                                                                                                                                                                (\approx_? \mathbf{refl})
                                                                                                                                                                                           \langle \{\}, \{X,Y\}, id, \{Y \approx_? (ab).Y, a\#_? \langle [a]f_n^C \langle \overline{a}, X \rangle, Y \rangle, (ab).X \approx_? X \} \rangle
                                                                                                                                                                                                                                                 (\approx_? \mathbf{inv})
                                                                                                                                                                                          \langle \{\}, \{X,Y\}, id, \{a \#_? \langle [a] f_n^C \langle \overline{a}, X \rangle, Y \rangle, (a b).X \approx_? X, (a b).Y \approx_? Y \} \rangle
                                                                                                                                                                                                                                              (\#_? \mathbf{pair})
                                                                                                                                                                                       \langle \{\}, \ \{X,Y\}, \ id, \ \{a \#_? [a] f_n^C \langle \overline{a}, X \rangle, \ a \#_? Y, \ (a \ b).X \approx_? X, \ (a \ b).Y \approx_? Y \} \rangle
                                                                                                                                                                                                                                                (\#_? \mathbf{a}[\mathbf{a}])
                                                                                                                                                                                                          \{\{\}, \{X,Y\}, id, \{a \#_? Y, (a b).X \approx_? X, (a b).Y \approx_? Y\}\}
                                                                                                                                                                                                                                                 (#? var)
                                                                                                                                                                                                              \langle \{a\#Y\},\ \{X,Y\},\ id,\ \{(a\,b).X\approx_? X,\ (a\,b).Y\approx_? Y\}\rangle
                                                                                                                                                                                                                                                        (\mu_{\mathbf{fp}})
                                                                                                                                                                                                               \langle \{a \# X, b \# X, a \# Y\}, \{X, Y\}, id, \{(ab).Y \approx_? Y\} \rangle
                                                                                                                                                                                                                                                         (\mu_{\mathbf{fp}})
                                                                                                                                                                                                                      \langle \{b\#Y,\ a\#X,\ b\#X,\ a\#Y\},\ \{X,Y\},\ id,\ \{\}\rangle
                                                                                                                                                                                                                                                                   (\top)
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