$\langle \{\},\ \{\},\ id,\ \{[a']\langle f_n^C\langle (a\,c).X, (b\,c)(a\,c).Y\rangle, (c\,d)(b\,d)(a\,d).X\rangle \approx_? [b']\langle f_n^C\langle X, Y\rangle, X\rangle\}\rangle$

$(\approx_?\ [\mathbf{ab}])$

$\langle \{\},\ \{\},\ id,\ \{\langle f_n^C\langle (a\,c).X, (b\,c)(a\,c).Y\rangle, (c\,d)(b\,d)(a\,d).X\rangle \approx_? \langle f_n^C\langle (a'\,b').X, (a'\,b').Y\rangle, (a'\,b').X\rangle,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle\}\rangle$

$(\approx_?\ \mathbf{pair})$

$\langle \{\},\ \{\},\ id,\ \{f_n^C\langle (a\,c).X, (b\,c)(a\,c).Y\rangle \approx_? f_n^C\langle (a'\,b').X, (a'\,b').Y\rangle,\ (c\,d)(b\,d)(a\,d).X \approx_? (a'\,b').X,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle\}\rangle$

$(\approx_?\ \mathbf{C})$

$\langle \{\},\ \{\},\ id,\ \{(a\,c).X \approx_? (a'\,b').X,\ (b\,c)(a\,c).Y \approx_? (a'\,b').Y,\ (c\,d)(b\,d)(a\,d).X \approx_? (a'\,b').X,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle\}\rangle$

$(\approx_?\ \mathbf{inv})$

$\langle \{\},\ \{\},\ id,\ \{(b\,c)(a\,c).Y \approx_? (a'\,b').Y,\ (c\,d)(b\,d)(a\,d).X \approx_? (a'\,b').X,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle,\ (a\,c)(a'\,b').X \approx_? X\}\rangle$

$(\approx_?\ \mathbf{inv})$

$\langle \{\},\ \{\},\ id,\ \{(c\,d)(b\,d)(a\,d).X \approx_? (a'\,b').X,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\approx_?\ \mathbf{inv})$

$\langle \{\},\ \{\},\ id,\ \{a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\#_?\ \mathbf{pair})$

$\langle \{\},\ \{\},\ id,\ \{a' \#_? f_n^C\langle X, Y\rangle,\ a' \#_? X,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\#_?\ \mathbf{app})$

$\langle \{\},\ \{\},\ id,\ \{a' \#_? \langle X, Y\rangle,\ a' \#_? X,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\#_?\ \mathbf{pair})$

$\langle \{\},\ \{\},\ id,\ \{a' \#_? Y,\ a' \#_? X,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\#_?\ \mathbf{var})$

$\langle \{a'\#Y\},\ \{\},\ id,\ \{a' \#_? X,\ (a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\#_?\ \mathbf{var})$

$\langle \{a'\#X,\ a'\#Y\},\ \{\},\ id,\ \{(a\,c)(a'\,b').X \approx_? X,\ (b\,c)(a\,c)(a'\,b').Y \approx_? Y,\ (c\,d)(b\,d)(a\,d)(a'\,b').X \approx_? X\}\rangle$

$(\top)$

$\langle \{\},\ \{\},\ id,\ \{(a\,c).X \approx_? (a'\,b').Y,\ (b\,c)(a\,c).Y \approx_? (a'\,b').X,\ (c\,d)(b\,d)(a\,d).X \approx_? (a'\,b').X,\ a' \#_? \langle f_n^C\langle X, Y\rangle, X\rangle\}\rangle$

$(\approx_?\ \mathbf{inst})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{(b\,c)(a\,c).Y \approx_? (a'\,b')(a\,c)(a'\,b').Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d).Y \approx_? (a'\,b')(a\,c)(a'\,b').Y,\ a' \#_? \langle f_n^C\langle (a'\,b')(a\,c).Y, Y\rangle, (a'\,b')(a\,c).Y\rangle\}\rangle$

$(\approx_?\ \mathbf{inv})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{(a'\,b')(a\,c)(c\,d)(b\,d)(a\,d).Y \approx_? (a'\,b')(a\,c)(a'\,b').Y,\ a' \#_? \langle f_n^C\langle (a'\,b')(a\,c).Y, Y\rangle, (a'\,b')(a\,c).Y\rangle,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\approx_?\ \mathbf{inv})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{a' \#_? \langle f_n^C\langle (a'\,b')(a\,c).Y, Y\rangle, (a'\,b')(a\,c).Y\rangle,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_?\ \mathbf{pair})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{a' \#_? f_n^C\langle (a'\,b')(a\,c).Y, Y\rangle,\ a' \#_? (a'\,b')(a\,c).Y,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_?\ \mathbf{app})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{a' \#_? \langle (a'\,b')(a\,c).Y, Y\rangle,\ a' \#_? (a'\,b')(a\,c).Y,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_?\ \mathbf{pair})$

$\langle \{\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{a' \#_? Y,\ a' \#_? (a'\,b')(a\,c).Y,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_?\ \mathbf{var})$

$\langle \{a'\#Y\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{a' \#_? (a'\,b')(a\,c).Y,\ (b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\#_?\ \mathbf{var})$

$\langle \{b'\#Y,\ a'\#Y\},\ \{\},\ X/(a'\,b')(a\,c).Y,\ \{(b\,c)(a\,c)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y,\ (a'\,b')(a\,c)(c\,d)(b\,d)(a\,d)(a'\,b')(a\,c)(a'\,b').Y \approx_? Y\}\rangle$

$(\top)$