

Hamiltonian of 3 ortho-set of H12

$$\begin{aligned} &4*s0*s1 + 4*s0*s10 + 4*s0*s11 + 72*s0*s12 + 2*s0*s13 + 2*s0*s14 + 2*s0*s15 + 2*s0*s16 + 2 \\ &*s0*s17 + 2*s0*s18 + 2*s0*s19 + 4*s0*s2 + 2*s0*s20 + 2*s0*s21 + 2*s0*s22 + 2*s0*s23 + 72 \\ &*s0*s24 + 2*s0*s25 + 2*s0*s26 + 2*s0*s27 + 2*s0*s28 + 2*s0*s29 + 4*s0*s3 + 2*s0*s30 + 2 \\ &*s0*s31 + 2*s0*s32 + 2*s0*s33 + 2*s0*s34 + 2*s0*s35 - 144*s0*s36 - 4*s0*s37 - 4*s0*s38 - 4 \\ &*s0*s39 + 4*s0*s4 - 4*s0*s40 - 4*s0*s41 - 4*s0*s42 - 4*s0*s43 - 4*s0*s44 - 4*s0*s45 - 4*s0 \\ &*s46 - 4*s0*s47 - 144*s0*s48 - 4*s0*s49 + 4*s0*s5 - 4*s0*s50 - 4*s0*s51 - 4*s0*s52 - 4*s0 \\ &*s53 - 4*s0*s54 - 4*s0*s55 - 4*s0*s56 - 4*s0*s57 - 4*s0*s58 - 4*s0*s59 + 4*s0*s6 + 4*s0*s7 + \\ &4*s0*s8 + 4*s0*s9 + 188.0*s0 + 4*s1*s10 + 4*s1*s11 + 2*s1*s12 + 72*s1*s13 + 2*s1*s14 + 2 \\ &*s1*s15 + 2*s1*s16 + 2*s1*s17 + 2*s1*s18 + 2*s1*s19 + 4*s1*s2 + 2*s1*s20 + 2*s1*s21 + 2 \\ &*s1*s22 + 2*s1*s23 + 2*s1*s24 + 72*s1*s25 + 2*s1*s26 + 2*s1*s27 + 2*s1*s28 + 2*s1*s29 + 4 \\ &*s1*s3 + 2*s1*s30 + 2*s1*s31 + 2*s1*s32 + 2*s1*s33 + 2*s1*s34 + 2*s1*s35 - 4*s1*s36 - 144 \\ &*s1*s37 - 4*s1*s38 - 4*s1*s39 + 4*s1*s4 - 4*s1*s40 - 4*s1*s41 - 4*s1*s42 - 4*s1*s43 - 4*s1 \\ &*s44 - 4*s1*s45 - 4*s1*s46 - 4*s1*s47 - 4*s1*s48 - 144*s1*s49 + 4*s1*s5 - 4*s1*s50 - 4*s1 \\ &*s51 - 4*s1*s52 - 4*s1*s53 - 4*s1*s54 - 4*s1*s55 - 4*s1*s56 - 4*s1*s57 - 4*s1*s58 - 4*s1*s59 \\ &+ 4*s1*s6 + 4*s1*s7 + 4*s1*s8 + 4*s1*s9 + 188.0*s1 + 4*s10*s11 + 2*s10*s12 + 2*s10*s13 + 2 \\ &*s10*s14 + 2*s10*s15 + 2*s10*s16 + 2*s10*s17 + 2*s10*s18 + 2*s10*s19 + 4*s10*s2 + 2*s10 \\ &*s20 + 2*s10*s21 + 72*s10*s22 + 2*s10*s23 + 2*s10*s24 + 2*s10*s25 + 2*s10*s26 + 2*s10 \\ &*s27 + 2*s10*s28 + 2*s10*s29 + 4*s10*s3 + 2*s10*s30 + 2*s10*s31 + 2*s10*s32 + 2*s10*s33 \\ &+ 72*s10*s34 + 2*s10*s35 - 4*s10*s36 - 4*s10*s37 - 4*s10*s38 - 4*s10*s39 + 4*s10*s4 - 4 \\ &*s10*s40 - 4*s10*s41 - 4*s10*s42 - 4*s10*s43 - 4*s10*s44 - 4*s10*s45 - 144*s10*s46 - 4*s10 \\ &*s47 - 4*s10*s48 - 4*s10*s49 + 4*s10*s5 - 4*s10*s50 - 4*s10*s51 - 4*s10*s52 - 4*s10*s53 - 4 \\ &*s10*s54 - 4*s10*s55 - 4*s10*s56 - 4*s10*s57 - 144*s10*s58 - 4*s10*s59 + 4*s10*s6 + 4*s10 \\ &*s7 + 4*s10*s8 + 4*s10*s9 + 188.0*s10 + 2*s11*s12 + 2*s11*s13 + 2*s11*s14 + 2*s11*s15 + 2 \\ &*s11*s16 + 2*s11*s17 + 2*s11*s18 + 2*s11*s19 + 4*s11*s2 + 2*s11*s20 + 2*s11*s21 + 2*s11 \\ &*s22 + 72*s11*s23 + 2*s11*s24 + 2*s11*s25 + 2*s11*s26 + 2*s11*s27 + 2*s11*s28 + 2*s11 \\ &*s29 + 4*s11*s3 + 2*s11*s30 + 2*s11*s31 + 2*s11*s32 + 2*s11*s33 + 2*s11*s34 + 72*s11 \\ &*s35 - 4*s11*s36 - 4*s11*s37 - 4*s11*s38 - 4*s11*s39 + 4*s11*s4 - 4*s11*s40 - 4*s11*s41 - 4 \\ &*s11*s42 - 4*s11*s43 - 4*s11*s44 - 4*s11*s45 - 4*s11*s46 - 144*s11*s47 - 4*s11*s48 - 4*s11 \\ &*s49 + 4*s11*s5 - 4*s11*s50 - 4*s11*s51 - 4*s11*s52 - 4*s11*s53 - 4*s11*s54 - 4*s11*s55 - 4 \\ &*s11*s56 - 4*s11*s57 - 4*s11*s58 - 144*s11*s59 + 4*s11*s6 + 4*s11*s7 + 4*s11*s8 + 4*s11 \\ &*s9 + 188.0*s11 + 4*s12*s13 + 4*s12*s14 + 4*s12*s15 + 4*s12*s16 + 4*s12*s17 + 4*s12*s18 + \\ &4*s12*s19 + 2*s12*s2 + 4*s12*s20 + 4*s12*s21 + 4*s12*s22 + 4*s12*s23 + 72*s12*s24 + 2 \\ &*s12*s25 + 2*s12*s26 + 2*s12*s27 + 2*s12*s28 + 2*s12*s29 + 2*s12*s3 + 2*s12*s30 + 2*s12 \\ &*s31 + 2*s12*s32 + 2*s12*s33 + 2*s12*s34 + 2*s12*s35 - 144*s12*s36 - 4*s12*s37 - 4*s12 \\ &*s38 - 4*s12*s39 + 2*s12*s4 - 4*s12*s40 - 4*s12*s41 - 4*s12*s42 - 4*s12*s43 - 4*s12*s44 - 4 \\ &*s12*s45 - 4*s12*s46 - 4*s12*s47 + 2*s12*s5 + 2*s12*s6 - 144*s12*s60 - 4*s12*s61 - 4*s12 \\ &*s62 - 4*s12*s63 - 4*s12*s64 - 4*s12*s65 - 4*s12*s66 - 4*s12*s67 - 4*s12*s68 - 4*s12*s69 + 2 \\ &*s12*s7 - 4*s12*s70 - 4*s12*s71 + 2*s12*s8 + 2*s12*s9 + 188.0*s12 + 4*s13*s14 + 4*s13*s15 \end{aligned}$$

2

$$\begin{aligned}
& + 2*s_{18}*s_5 + 72*s_{18}*s_6 - 4*s_{18}*s_{60} - 4*s_{18}*s_{61} - 4*s_{18}*s_{62} - 4*s_{18}*s_{63} - 4*s_{18}*s_{64} - 4*s_{18} \\
& *s_{65} - 144*s_{18}*s_{66} - 4*s_{18}*s_{67} - 4*s_{18}*s_{68} - 4*s_{18}*s_{69} + 2*s_{18}*s_7 - 4*s_{18}*s_{70} - 4*s_{18}*s_{71} + \\
& 2*s_{18}*s_8 + 2*s_{18}*s_9 + 188.0*s_{18} + 2*s_{19}*s_2 + 4*s_{19}*s_{20} + 4*s_{19}*s_{21} + 4*s_{19}*s_{22} + 4*s_{19} \\
& *s_{23} + 2*s_{19}*s_{24} + 2*s_{19}*s_{25} + 2*s_{19}*s_{26} + 2*s_{19}*s_{27} + 2*s_{19}*s_{28} + 2*s_{19}*s_{29} + 2*s_{19}*s_3 \\
& + 2*s_{19}*s_{30} + 72*s_{19}*s_{31} + 2*s_{19}*s_{32} + 2*s_{19}*s_{33} + 2*s_{19}*s_{34} + 2*s_{19}*s_{35} - 4*s_{19}*s_{36} - 4 \\
& *s_{19}*s_{37} - 4*s_{19}*s_{38} - 4*s_{19}*s_{39} + 2*s_{19}*s_4 - 4*s_{19}*s_{40} - 4*s_{19}*s_{41} - 4*s_{19}*s_{42} - 144*s_{19} \\
& *s_{43} - 4*s_{19}*s_{44} - 4*s_{19}*s_{45} - 4*s_{19}*s_{46} - 4*s_{19}*s_{47} + 2*s_{19}*s_5 + 2*s_{19}*s_6 - 4*s_{19}*s_{60} - 4 \\
& *s_{19}*s_{61} - 4*s_{19}*s_{62} - 4*s_{19}*s_{63} - 4*s_{19}*s_{64} - 4*s_{19}*s_{65} - 4*s_{19}*s_{66} - 144*s_{19}*s_{67} - 4*s_{19} \\
& *s_{68} - 4*s_{19}*s_{69} + 72*s_{19}*s_7 - 4*s_{19}*s_{70} - 4*s_{19}*s_{71} + 2*s_{19}*s_8 + 2*s_{19}*s_9 + 188.0*s_{19} + 2 \\
& *s_{20}*s_{20} + 2*s_{20}*s_{21} + 2*s_{20}*s_{22} + 2*s_{20}*s_{23} + 2*s_{20}*s_{24} + 2*s_{20}*s_{25} + 72*s_{20}*s_{26} + 2*s_{20}*s_{27} + 2 \\
& *s_{20}*s_{28} + 2*s_{20}*s_{29} + 4*s_{20}*s_3 + 2*s_{20}*s_{30} + 2*s_{20}*s_{31} + 2*s_{20}*s_{32} + 2*s_{20}*s_{33} + 2*s_{20}*s_{34} + 2 \\
& *s_{20}*s_{35} - 4*s_{20}*s_{36} - 4*s_{20}*s_{37} - 144*s_{20}*s_{38} - 4*s_{20}*s_{39} + 4*s_{20}*s_4 - 4*s_{20}*s_{40} - 4*s_{20}*s_{41} - 4*s_{20} \\
& *s_{42} - 4*s_{20}*s_{43} - 4*s_{20}*s_{44} - 4*s_{20}*s_{45} - 4*s_{20}*s_{46} - 4*s_{20}*s_{47} - 4*s_{20}*s_{48} - 4*s_{20}*s_{49} + 4*s_{20}*s_5 - \\
& 144*s_{20}*s_{50} - 4*s_{20}*s_{51} - 4*s_{20}*s_{52} - 4*s_{20}*s_{53} - 4*s_{20}*s_{54} - 4*s_{20}*s_{55} - 4*s_{20}*s_{56} - 4*s_{20}*s_{57} - 4 \\
& *s_{20}*s_{58} - 4*s_{20}*s_{59} + 4*s_{20}*s_6 + 4*s_{20}*s_7 + 4*s_{20}*s_8 + 4*s_{20}*s_9 + 188.0*s_{20} + 4*s_{20}*s_{21} + 4*s_{20} \\
& *s_{22} + 4*s_{20}*s_{23} + 2*s_{20}*s_{24} + 2*s_{20}*s_{25} + 2*s_{20}*s_{26} + 2*s_{20}*s_{27} + 2*s_{20}*s_{28} + 2*s_{20}*s_{29} \\
& + 2*s_{20}*s_3 + 2*s_{20}*s_{30} + 2*s_{20}*s_{31} + 72*s_{20}*s_{32} + 2*s_{20}*s_{33} + 2*s_{20}*s_{34} + 2*s_{20}*s_{35} - 4 \\
& *s_{20}*s_{36} - 4*s_{20}*s_{37} - 4*s_{20}*s_{38} - 4*s_{20}*s_{39} + 2*s_{20}*s_4 - 4*s_{20}*s_{40} - 4*s_{20}*s_{41} - 4*s_{20} \\
& *s_{42} - 4*s_{20}*s_{43} - 144*s_{20}*s_{44} - 4*s_{20}*s_{45} - 4*s_{20}*s_{46} - 4*s_{20}*s_{47} + 2*s_{20}*s_5 + 2*s_{20}*s_6 - \\
& 4*s_{20}*s_{60} - 4*s_{20}*s_{61} - 4*s_{20}*s_{62} - 4*s_{20}*s_{63} - 4*s_{20}*s_{64} - 4*s_{20}*s_{65} - 4*s_{20}*s_{66} - 4*s_{20} \\
& *s_{67} - 144*s_{20}*s_{68} - 4*s_{20}*s_{69} + 2*s_{20}*s_7 - 4*s_{20}*s_{70} - 4*s_{20}*s_{71} + 72*s_{20}*s_8 + 2*s_{20}*s_9 + \\
& 188.0*s_{20} + 4*s_{21}*s_{22} + 4*s_{21}*s_{23} + 2*s_{21}*s_{24} + 2*s_{21}*s_{25} + 2*s_{21}*s_{26} + 2*s_{21}*s_{27} + 2 \\
& *s_{21}*s_{28} + 2*s_{21}*s_{29} + 2*s_{21}*s_3 + 2*s_{21}*s_{30} + 2*s_{21}*s_{31} + 2*s_{21}*s_{32} + 72*s_{21}*s_{33} + 2*s_{21} \\
& *s_{34} + 2*s_{21}*s_{35} - 4*s_{21}*s_{36} - 4*s_{21}*s_{37} - 4*s_{21}*s_{38} - 4*s_{21}*s_{39} + 2*s_{21}*s_4 - 4*s_{21}*s_{40} - 4 \\
& *s_{21}*s_{41} - 4*s_{21}*s_{42} - 4*s_{21}*s_{43} - 4*s_{21}*s_{44} - 144*s_{21}*s_{45} - 4*s_{21}*s_{46} - 4*s_{21}*s_{47} + 2*s_{21} \\
& *s_5 + 2*s_{21}*s_6 - 4*s_{21}*s_{60} - 4*s_{21}*s_{61} - 4*s_{21}*s_{62} - 4*s_{21}*s_{63} - 4*s_{21}*s_{64} - 4*s_{21}*s_{65} - 4 \\
& *s_{21}*s_{66} - 4*s_{21}*s_{67} - 4*s_{21}*s_{68} - 144*s_{21}*s_{69} + 2*s_{21}*s_7 - 4*s_{21}*s_{70} - 4*s_{21}*s_{71} + 2*s_{21} \\
& *s_8 + 72*s_{21}*s_9 + 188.0*s_{21} + 4*s_{22}*s_{23} + 2*s_{22}*s_{24} + 2*s_{22}*s_{25} + 2*s_{22}*s_{26} + 2*s_{22}*s_{27} + \\
& 2*s_{22}*s_{28} + 2*s_{22}*s_{29} + 2*s_{22}*s_3 + 2*s_{22}*s_{30} + 2*s_{22}*s_{31} + 2*s_{22}*s_{32} + 2*s_{22}*s_{33} + 72 \\
& *s_{22}*s_{34} + 2*s_{22}*s_{35} - 4*s_{22}*s_{36} - 4*s_{22}*s_{37} - 4*s_{22}*s_{38} - 4*s_{22}*s_{39} + 2*s_{22}*s_4 - 4*s_{22} \\
& *s_{40} - 4*s_{22}*s_{41} - 4*s_{22}*s_{42} - 4*s_{22}*s_{43} - 4*s_{22}*s_{44} - 4*s_{22}*s_{45} - 144*s_{22}*s_{46} - 4*s_{22}*s_{47} \\
& + 2*s_{22}*s_5 + 2*s_{22}*s_6 - 4*s_{22}*s_{60} - 4*s_{22}*s_{61} - 4*s_{22}*s_{62} - 4*s_{22}*s_{63} - 4*s_{22}*s_{64} - 4*s_{22} \\
& *s_{65} - 4*s_{22}*s_{66} - 4*s_{22}*s_{67} - 4*s_{22}*s_{68} - 4*s_{22}*s_{69} + 2*s_{22}*s_7 - 144*s_{22}*s_{70} - 4*s_{22}*s_{71} + \\
& 2*s_{22}*s_8 + 2*s_{22}*s_9 + 188.0*s_{22} + 2*s_{23}*s_{24} + 2*s_{23}*s_{25} + 2*s_{23}*s_{26} + 2*s_{23}*s_{27} + 2*s_{23} \\
& *s_{28} + 2*s_{23}*s_{29} + 2*s_{23}*s_3 + 2*s_{23}*s_{30} + 2*s_{23}*s_{31} + 2*s_{23}*s_{32} + 2*s_{23}*s_{33} + 2*s_{23}*s_{34} \\
& + 72*s_{23}*s_{35} - 4*s_{23}*s_{36} - 4*s_{23}*s_{37} - 4*s_{23}*s_{38} - 4*s_{23}*s_{39} + 2*s_{23}*s_4 - 4*s_{23}*s_{40} - 4*s_{23} \\
& *s_{41} - 4*s_{23}*s_{42} - 4*s_{23}*s_{43} - 4*s_{23}*s_{44} - 4*s_{23}*s_{45} - 4*s_{23}*s_{46} - 144*s_{23}*s_{47} + 2*s_{23}*s_5 + \\
& 2*s_{23}*s_6 - 4*s_{23}*s_{60} - 4*s_{23}*s_{61} - 4*s_{23}*s_{62} - 4*s_{23}*s_{63} - 4*s_{23}*s_{64} - 4*s_{23}*s_{65} - 4*s_{23} \\
& *s_{66} - 4*s_{23}*s_{67} - 4*s_{23}*s_{68} - 4*s_{23}*s_{69} + 2*s_{23}*s_7 - 4*s_{23}*s_{70} - 144*s_{23}*s_{71} + 2*s_{23}*s_8 + \\
& 2*s_{23}*s_9 + 188.0*s_{23} + 4*s_{24}*s_{25} + 4*s_{24}*s_{26} + 4*s_{24}*s_{27} + 4*s_{24}*s_{28} + 4*s_{24}*s_{29} + 2*s_{24}
\end{aligned}$$

$s_3 + 4s_{24}s_{30} + 4s_{24}s_{31} + 4s_{24}s_{32} + 4s_{24}s_{33} + 4s_{24}s_{34} + 4s_{24}s_{35} + 2s_{24}s_4 -$
 $144s_{24}s_{48} - 4s_{24}s_{49} + 2s_{24}s_5 - 4s_{24}s_{50} - 4s_{24}s_{51} - 4s_{24}s_{52} - 4s_{24}s_{53} - 4s_{24}$
 $s_{54} - 4s_{24}s_{55} - 4s_{24}s_{56} - 4s_{24}s_{57} - 4s_{24}s_{58} - 4s_{24}s_{59} + 2s_{24}s_6 - 144s_{24}s_{60} -$
 $4s_{24}s_{61} - 4s_{24}s_{62} - 4s_{24}s_{63} - 4s_{24}s_{64} - 4s_{24}s_{65} - 4s_{24}s_{66} - 4s_{24}s_{67} - 4s_{24}$
 $s_{68} - 4s_{24}s_{69} + 2s_{24}s_7 - 4s_{24}s_{70} - 4s_{24}s_{71} + 2s_{24}s_8 + 2s_{24}s_9 + 188.0s_{24} + 4$
 $s_{25}s_{26} + 4s_{25}s_{27} + 4s_{25}s_{28} + 4s_{25}s_{29} + 2s_{25}s_3 + 4s_{25}s_{30} + 4s_{25}s_{31} + 4s_{25}$
 $s_{32} + 4s_{25}s_{33} + 4s_{25}s_{34} + 4s_{25}s_{35} + 2s_{25}s_4 - 4s_{25}s_{48} - 144s_{25}s_{49} + 2s_{25}s_5 -$
 $4s_{25}s_{50} - 4s_{25}s_{51} - 4s_{25}s_{52} - 4s_{25}s_{53} - 4s_{25}s_{54} - 4s_{25}s_{55} - 4s_{25}s_{56} - 4s_{25}$
 $s_{57} - 4s_{25}s_{58} - 4s_{25}s_{59} + 2s_{25}s_6 - 4s_{25}s_{60} - 144s_{25}s_{61} - 4s_{25}s_{62} - 4s_{25}s_{63} -$
 $4s_{25}s_{64} - 4s_{25}s_{65} - 4s_{25}s_{66} - 4s_{25}s_{67} - 4s_{25}s_{68} - 4s_{25}s_{69} + 2s_{25}s_7 - 4s_{25}$
 $s_{70} - 4s_{25}s_{71} + 2s_{25}s_8 + 2s_{25}s_9 + 188.0s_{25} + 4s_{26}s_{27} + 4s_{26}s_{28} + 4s_{26}s_{29} + 2$
 $s_{26}s_3 + 4s_{26}s_{30} + 4s_{26}s_{31} + 4s_{26}s_{32} + 4s_{26}s_{33} + 4s_{26}s_{34} + 4s_{26}s_{35} + 2s_{26}$
 $s_4 - 4s_{26}s_{48} - 4s_{26}s_{49} + 2s_{26}s_5 - 144s_{26}s_{50} - 4s_{26}s_{51} - 4s_{26}s_{52} - 4s_{26}s_{53} - 4$
 $s_{26}s_{54} - 4s_{26}s_{55} - 4s_{26}s_{56} - 4s_{26}s_{57} - 4s_{26}s_{58} - 4s_{26}s_{59} + 2s_{26}s_6 - 4s_{26}$
 $s_{60} - 4s_{26}s_{61} - 144s_{26}s_{62} - 4s_{26}s_{63} - 4s_{26}s_{64} - 4s_{26}s_{65} - 4s_{26}s_{66} - 4s_{26}$
 $s_{67} - 4s_{26}s_{68} - 4s_{26}s_{69} + 2s_{26}s_7 - 4s_{26}s_{70} - 4s_{26}s_{71} + 2s_{26}s_8 + 2s_{26}s_9 +$
 $188.0s_{26} + 4s_{27}s_{28} + 4s_{27}s_{29} + 72s_{27}s_3 + 4s_{27}s_{30} + 4s_{27}s_{31} + 4s_{27}s_{32} + 4$
 $s_{27}s_{33} + 4s_{27}s_{34} + 4s_{27}s_{35} + 2s_{27}s_4 - 4s_{27}s_{48} - 4s_{27}s_{49} + 2s_{27}s_5 - 4s_{27}$
 $s_{50} - 144s_{27}s_{51} - 4s_{27}s_{52} - 4s_{27}s_{53} - 4s_{27}s_{54} - 4s_{27}s_{55} - 4s_{27}s_{56} - 4s_{27}$
 $s_{57} - 4s_{27}s_{58} - 4s_{27}s_{59} + 2s_{27}s_6 - 4s_{27}s_{60} - 4s_{27}s_{61} - 4s_{27}s_{62} - 144s_{27}s_{63} -$
 $4s_{27}s_{64} - 4s_{27}s_{65} - 4s_{27}s_{66} - 4s_{27}s_{67} - 4s_{27}s_{68} - 4s_{27}s_{69} + 2s_{27}s_7 - 4s_{27}$
 $s_{70} - 4s_{27}s_{71} + 2s_{27}s_8 + 2s_{27}s_9 + 188.0s_{27} + 4s_{28}s_{29} + 2s_{28}s_3 + 4s_{28}s_{30} + 4$
 $s_{28}s_{31} + 4s_{28}s_{32} + 4s_{28}s_{33} + 4s_{28}s_{34} + 4s_{28}s_{35} + 72s_{28}s_4 - 4s_{28}s_{48} - 4s_{28}$
 $s_{49} + 2s_{28}s_5 - 4s_{28}s_{50} - 4s_{28}s_{51} - 144s_{28}s_{52} - 4s_{28}s_{53} - 4s_{28}s_{54} - 4s_{28}s_{55} -$
 $4s_{28}s_{56} - 4s_{28}s_{57} - 4s_{28}s_{58} - 4s_{28}s_{59} + 2s_{28}s_6 - 4s_{28}s_{60} - 4s_{28}s_{61} - 4s_{28}$
 $s_{62} - 4s_{28}s_{63} - 144s_{28}s_{64} - 4s_{28}s_{65} - 4s_{28}s_{66} - 4s_{28}s_{67} - 4s_{28}s_{68} - 4s_{28}s_{69}$
 $+ 2s_{28}s_7 - 4s_{28}s_{70} - 4s_{28}s_{71} + 2s_{28}s_8 + 2s_{28}s_9 + 188.0s_{28} + 2s_{29}s_3 + 4s_{29}$
 $s_{30} + 4s_{29}s_{31} + 4s_{29}s_{32} + 4s_{29}s_{33} + 4s_{29}s_{34} + 4s_{29}s_{35} + 2s_{29}s_4 - 4s_{29}s_{48} -$
 $4s_{29}s_{49} + 72s_{29}s_5 - 4s_{29}s_{50} - 4s_{29}s_{51} - 4s_{29}s_{52} - 144s_{29}s_{53} - 4s_{29}s_{54} - 4$
 $s_{29}s_{55} - 4s_{29}s_{56} - 4s_{29}s_{57} - 4s_{29}s_{58} - 4s_{29}s_{59} + 2s_{29}s_6 - 4s_{29}s_{60} - 4s_{29}$
 $s_{61} - 4s_{29}s_{62} - 4s_{29}s_{63} - 4s_{29}s_{64} - 144s_{29}s_{65} - 4s_{29}s_{66} - 4s_{29}s_{67} - 4s_{29}$
 $s_{68} - 4s_{29}s_{69} + 2s_{29}s_7 - 4s_{29}s_{70} - 4s_{29}s_{71} + 2s_{29}s_8 + 2s_{29}s_9 + 188.0s_{29} + 2$
 $s_3s_{30} + 2s_3s_{31} + 2s_3s_{32} + 2s_3s_{33} + 2s_3s_{34} + 2s_3s_{35} - 4s_3s_{36} - 4s_3s_{37} - 4s_3$
 $s_{38} - 144s_3s_{39} + 4s_3s_4 - 4s_3s_{40} - 4s_3s_{41} - 4s_3s_{42} - 4s_3s_{43} - 4s_3s_{44} - 4s_3$
 $s_{45} - 4s_3s_{46} - 4s_3s_{47} - 4s_3s_{48} - 4s_3s_{49} + 4s_3s_5 - 4s_3s_{50} - 144s_3s_{51} - 4s_3$
 $s_{52} - 4s_3s_{53} - 4s_3s_{54} - 4s_3s_{55} - 4s_3s_{56} - 4s_3s_{57} - 4s_3s_{58} - 4s_3s_{59} + 4s_3s_6 +$
 $4s_3s_7 + 4s_3s_8 + 4s_3s_9 + 188.0s_3 + 4s_{30}s_{31} + 4s_{30}s_{32} + 4s_{30}s_{33} + 4s_{30}s_{34} +$
 $4s_{30}s_{35} + 2s_{30}s_4 - 4s_{30}s_{48} - 4s_{30}s_{49} + 2s_{30}s_5 - 4s_{30}s_{50} - 4s_{30}s_{51} - 4s_{30}$
 $s_{52} - 4s_{30}s_{53} - 144s_{30}s_{54} - 4s_{30}s_{55} - 4s_{30}s_{56} - 4s_{30}s_{57} - 4s_{30}s_{58} - 4s_{30}s_{59}$
 $+ 72s_{30}s_6 - 4s_{30}s_{60} - 4s_{30}s_{61} - 4s_{30}s_{62} - 4s_{30}s_{63} - 4s_{30}s_{64} - 4s_{30}s_{65} - 144$

$$\begin{aligned}
& *s_{30}s_{66} - 4*s_{30}s_{67} - 4*s_{30}s_{68} - 4*s_{30}s_{69} + 2*s_{30}s_{70} - 4*s_{30}s_{71} + 2*s_{30}s_{8} \\
& + 2*s_{30}s_{9} + 188.0*s_{30} + 4*s_{31}s_{32} + 4*s_{31}s_{33} + 4*s_{31}s_{34} + 4*s_{31}s_{35} + 2*s_{31}s_{4} - 4*s_{31} \\
& *s_{48} - 4*s_{31}s_{49} + 2*s_{31}s_{5} - 4*s_{31}s_{50} - 4*s_{31}s_{51} - 4*s_{31}s_{52} - 4*s_{31}s_{53} - 4*s_{31}s_{54} - \\
& 144*s_{31}s_{55} - 4*s_{31}s_{56} - 4*s_{31}s_{57} - 4*s_{31}s_{58} - 4*s_{31}s_{59} + 2*s_{31}s_{6} - 4*s_{31}s_{60} - 4*s_{31} \\
& *s_{61} - 4*s_{31}s_{62} - 4*s_{31}s_{63} - 4*s_{31}s_{64} - 4*s_{31}s_{65} - 4*s_{31}s_{66} - 144*s_{31}s_{67} - 4*s_{31} \\
& *s_{68} - 4*s_{31}s_{69} + 72*s_{31}s_{7} - 4*s_{31}s_{70} - 4*s_{31}s_{71} + 2*s_{31}s_{8} + 2*s_{31}s_{9} + 188.0*s_{31} + 4 \\
& *s_{32}s_{33} + 4*s_{32}s_{34} + 4*s_{32}s_{35} + 2*s_{32}s_{4} - 4*s_{32}s_{48} - 4*s_{32}s_{49} + 2*s_{32}s_{5} - 4*s_{32} \\
& *s_{50} - 4*s_{32}s_{51} - 4*s_{32}s_{52} - 4*s_{32}s_{53} - 4*s_{32}s_{54} - 4*s_{32}s_{55} - 144*s_{32}s_{56} - 4*s_{32} \\
& *s_{57} - 4*s_{32}s_{58} - 4*s_{32}s_{59} + 2*s_{32}s_{6} - 4*s_{32}s_{60} - 4*s_{32}s_{61} - 4*s_{32}s_{62} - 4*s_{32}s_{63} - 4 \\
& *s_{32}s_{64} - 4*s_{32}s_{65} - 4*s_{32}s_{66} - 4*s_{32}s_{67} - 144*s_{32}s_{68} - 4*s_{32}s_{69} + 2*s_{32}s_{7} - 4*s_{32} \\
& *s_{70} - 4*s_{32}s_{71} + 72*s_{32}s_{8} + 2*s_{32}s_{9} + 188.0*s_{32} + 4*s_{33}s_{34} + 4*s_{33}s_{35} + 2*s_{33}s_{4} - 4 \\
& *s_{33}s_{48} - 4*s_{33}s_{49} + 2*s_{33}s_{5} - 4*s_{33}s_{50} - 4*s_{33}s_{51} - 4*s_{33}s_{52} - 4*s_{33}s_{53} - 4*s_{33} \\
& *s_{54} - 4*s_{33}s_{55} - 4*s_{33}s_{56} - 144*s_{33}s_{57} - 4*s_{33}s_{58} - 4*s_{33}s_{59} + 2*s_{33}s_{6} - 4*s_{33}s_{60} - \\
& 4*s_{33}s_{61} - 4*s_{33}s_{62} - 4*s_{33}s_{63} - 4*s_{33}s_{64} - 4*s_{33}s_{65} - 4*s_{33}s_{66} - 4*s_{33}s_{67} - 4*s_{33} \\
& *s_{68} - 144*s_{33}s_{69} + 2*s_{33}s_{7} - 4*s_{33}s_{70} - 4*s_{33}s_{71} + 2*s_{33}s_{8} + 72*s_{33}s_{9} + 188.0*s_{33} + \\
& 4*s_{34}s_{35} + 2*s_{34}s_{4} - 4*s_{34}s_{48} - 4*s_{34}s_{49} + 2*s_{34}s_{5} - 4*s_{34}s_{50} - 4*s_{34}s_{51} - 4*s_{34} \\
& *s_{52} - 4*s_{34}s_{53} - 4*s_{34}s_{54} - 4*s_{34}s_{55} - 4*s_{34}s_{56} - 4*s_{34}s_{57} - 144*s_{34}s_{58} - 4*s_{34}s_{59} \\
& + 2*s_{34}s_{6} - 4*s_{34}s_{60} - 4*s_{34}s_{61} - 4*s_{34}s_{62} - 4*s_{34}s_{63} - 4*s_{34}s_{64} - 4*s_{34}s_{65} - 4*s_{34} \\
& *s_{66} - 4*s_{34}s_{67} - 4*s_{34}s_{68} - 4*s_{34}s_{69} + 2*s_{34}s_{7} - 144*s_{34}s_{70} - 4*s_{34}s_{71} + 2*s_{34}s_{8} + \\
& 2*s_{34}s_{9} + 188.0*s_{34} + 2*s_{35}s_{4} - 4*s_{35}s_{48} - 4*s_{35}s_{49} + 2*s_{35}s_{5} - 4*s_{35}s_{50} - 4*s_{35} \\
& *s_{51} - 4*s_{35}s_{52} - 4*s_{35}s_{53} - 4*s_{35}s_{54} - 4*s_{35}s_{55} - 4*s_{35}s_{56} - 4*s_{35}s_{57} - 4*s_{35}s_{58} - \\
& 144*s_{35}s_{59} + 2*s_{35}s_{6} - 4*s_{35}s_{60} - 4*s_{35}s_{61} - 4*s_{35}s_{62} - 4*s_{35}s_{63} - 4*s_{35}s_{64} - 4*s_{35} \\
& *s_{65} - 4*s_{35}s_{66} - 4*s_{35}s_{67} - 4*s_{35}s_{68} - 4*s_{35}s_{69} + 2*s_{35}s_{7} - 4*s_{35}s_{70} - 144*s_{35}s_{71} + \\
& 2*s_{35}s_{8} + 2*s_{35}s_{9} + 188.0*s_{35} + 8*s_{36}s_{37} + 8*s_{36}s_{38} + 8*s_{36}s_{39} - 4*s_{36}s_{4} + 8*s_{36} \\
& *s_{40} + 8*s_{36}s_{41} + 8*s_{36}s_{42} + 8*s_{36}s_{43} + 8*s_{36}s_{44} + 8*s_{36}s_{45} + 8*s_{36}s_{46} + 8*s_{36} \\
& *s_{47} - 4*s_{36}s_{5} - 4*s_{36}s_{6} - 4*s_{36}s_{7} - 4*s_{36}s_{8} - 4*s_{36}s_{9} - 188.0*s_{36} + 8*s_{37}s_{38} + 8*s_{37} \\
& *s_{39} - 4*s_{37}s_{4} + 8*s_{37}s_{40} + 8*s_{37}s_{41} + 8*s_{37}s_{42} + 8*s_{37}s_{43} + 8*s_{37}s_{44} + 8*s_{37}s_{45} + \\
& 8*s_{37}s_{46} + 8*s_{37}s_{47} - 4*s_{37}s_{5} - 4*s_{37}s_{6} - 4*s_{37}s_{7} - 4*s_{37}s_{8} - 4*s_{37}s_{9} - 188.0*s_{37} + 8 \\
& *s_{38}s_{39} - 4*s_{38}s_{4} + 8*s_{38}s_{40} + 8*s_{38}s_{41} + 8*s_{38}s_{42} + 8*s_{38}s_{43} + 8*s_{38}s_{44} + 8*s_{38} \\
& *s_{45} + 8*s_{38}s_{46} + 8*s_{38}s_{47} - 4*s_{38}s_{5} - 4*s_{38}s_{6} - 4*s_{38}s_{7} - 4*s_{38}s_{8} - 4*s_{38}s_{9} - 188.0 \\
& *s_{38} - 4*s_{39}s_{4} + 8*s_{39}s_{40} + 8*s_{39}s_{41} + 8*s_{39}s_{42} + 8*s_{39}s_{43} + 8*s_{39}s_{44} + 8*s_{39}s_{45} + \\
& 8*s_{39}s_{46} + 8*s_{39}s_{47} - 4*s_{39}s_{5} - 4*s_{39}s_{6} - 4*s_{39}s_{7} - 4*s_{39}s_{8} - 4*s_{39}s_{9} - 188.0*s_{39} - \\
& 144*s_{4}s_{40} - 4*s_{4}s_{41} - 4*s_{4}s_{42} - 4*s_{4}s_{43} - 4*s_{4}s_{44} - 4*s_{4}s_{45} - 4*s_{4}s_{46} - 4*s_{4}s_{47} - 4 \\
& *s_{4}s_{48} - 4*s_{4}s_{49} + 4*s_{4}s_{5} - 4*s_{4}s_{50} - 4*s_{4}s_{51} - 144*s_{4}s_{52} - 4*s_{4}s_{53} - 4*s_{4}s_{54} - 4*s_{4} \\
& *s_{55} - 4*s_{4}s_{56} - 4*s_{4}s_{57} - 4*s_{4}s_{58} - 4*s_{4}s_{59} + 4*s_{4}s_{6} + 4*s_{4}s_{7} + 4*s_{4}s_{8} + 4*s_{4}s_{9} + \\
& 188.0*s_{4} + 8*s_{40}s_{41} + 8*s_{40}s_{42} + 8*s_{40}s_{43} + 8*s_{40}s_{44} + 8*s_{40}s_{45} + 8*s_{40}s_{46} + 8*s_{40} \\
& *s_{47} - 4*s_{40}s_{5} - 4*s_{40}s_{6} - 4*s_{40}s_{7} - 4*s_{40}s_{8} - 4*s_{40}s_{9} - 188.0*s_{40} + 8*s_{41}s_{42} + 8*s_{41} \\
& *s_{43} + 8*s_{41}s_{44} + 8*s_{41}s_{45} + 8*s_{41}s_{46} + 8*s_{41}s_{47} - 144*s_{41}s_{5} - 4*s_{41}s_{6} - 4*s_{41}s_{7} - \\
& 4*s_{41}s_{8} - 4*s_{41}s_{9} - 188.0*s_{41} + 8*s_{42}s_{43} + 8*s_{42}s_{44} + 8*s_{42}s_{45} + 8*s_{42}s_{46} + 8*s_{42} \\
& *s_{47} - 4*s_{42}s_{5} - 144*s_{42}s_{6} - 4*s_{42}s_{7} - 4*s_{42}s_{8} - 4*s_{42}s_{9} - 188.0*s_{42} + 8*s_{43}s_{44} + 8
\end{aligned}$$

$s_{43}s_{45} + 8s_{43}s_{46} + 8s_{43}s_{47} - 4s_{43}s_5 - 4s_{43}s_6 - 144s_{43}s_7 - 4s_{43}s_8 - 4s_{43}s_9 -$
 $188.0s_{43} + 8s_{44}s_{45} + 8s_{44}s_{46} + 8s_{44}s_{47} - 4s_{44}s_5 - 4s_{44}s_6 - 4s_{44}s_7 - 144s_{44}$
 $s_8 - 4s_{44}s_9 - 188.0s_{44} + 8s_{45}s_{46} + 8s_{45}s_{47} - 4s_{45}s_5 - 4s_{45}s_6 - 4s_{45}s_7 - 4s_{45}$
 $s_8 - 144s_{45}s_9 - 188.0s_{45} + 8s_{46}s_{47} - 4s_{46}s_5 - 4s_{46}s_6 - 4s_{46}s_7 - 4s_{46}s_8 - 4s_{46}$
 $s_9 - 188.0s_{46} - 4s_{47}s_5 - 4s_{47}s_6 - 4s_{47}s_7 - 4s_{47}s_8 - 4s_{47}s_9 - 188.0s_{47} + 8s_{48}$
 $s_{49} - 4s_{48}s_5 + 8s_{48}s_{50} + 8s_{48}s_{51} + 8s_{48}s_{52} + 8s_{48}s_{53} + 8s_{48}s_{54} + 8s_{48}s_{55} +$
 $8s_{48}s_{56} + 8s_{48}s_{57} + 8s_{48}s_{58} + 8s_{48}s_{59} - 4s_{48}s_6 - 4s_{48}s_7 - 4s_{48}s_8 - 4s_{48}s_9 -$
 $188.0s_{48} - 4s_{49}s_5 + 8s_{49}s_{50} + 8s_{49}s_{51} + 8s_{49}s_{52} + 8s_{49}s_{53} + 8s_{49}s_{54} + 8s_{49}$
 $s_{55} + 8s_{49}s_{56} + 8s_{49}s_{57} + 8s_{49}s_{58} + 8s_{49}s_{59} - 4s_{49}s_6 - 4s_{49}s_7 - 4s_{49}s_8 - 4$
 $s_{49}s_9 - 188.0s_{49} - 4s_5s_{50} - 4s_5s_{51} - 4s_5s_{52} - 144s_5s_{53} - 4s_5s_{54} - 4s_5s_{55} - 4$
 $s_5s_{56} - 4s_5s_{57} - 4s_5s_{58} - 4s_5s_{59} + 4s_5s_6 + 4s_5s_7 + 4s_5s_8 + 4s_5s_9 + 188.0s_5$
 $+ 8s_{50}s_{51} + 8s_{50}s_{52} + 8s_{50}s_{53} + 8s_{50}s_{54} + 8s_{50}s_{55} + 8s_{50}s_{56} + 8s_{50}s_{57} + 8$
 $s_{50}s_{58} + 8s_{50}s_{59} - 4s_{50}s_6 - 4s_{50}s_7 - 4s_{50}s_8 - 4s_{50}s_9 - 188.0s_{50} + 8s_{51}s_{52} +$
 $8s_{51}s_{53} + 8s_{51}s_{54} + 8s_{51}s_{55} + 8s_{51}s_{56} + 8s_{51}s_{57} + 8s_{51}s_{58} + 8s_{51}s_{59} - 4$
 $s_{51}s_6 - 4s_{51}s_7 - 4s_{51}s_8 - 4s_{51}s_9 - 188.0s_{51} + 8s_{52}s_{53} + 8s_{52}s_{54} + 8s_{52}s_{55} +$
 $8s_{52}s_{56} + 8s_{52}s_{57} + 8s_{52}s_{58} + 8s_{52}s_{59} - 4s_{52}s_6 - 4s_{52}s_7 - 4s_{52}s_8 - 4s_{52}s_9 -$
 $188.0s_{52} + 8s_{53}s_{54} + 8s_{53}s_{55} + 8s_{53}s_{56} + 8s_{53}s_{57} + 8s_{53}s_{58} + 8s_{53}s_{59} - 4$
 $s_{53}s_6 - 4s_{53}s_7 - 4s_{53}s_8 - 4s_{53}s_9 - 188.0s_{53} + 8s_{54}s_{55} + 8s_{54}s_{56} + 8s_{54}s_{57} +$
 $8s_{54}s_{58} + 8s_{54}s_{59} - 144s_{54}s_6 - 4s_{54}s_7 - 4s_{54}s_8 - 4s_{54}s_9 - 188.0s_{54} + 8s_{55}$
 $s_{56} + 8s_{55}s_{57} + 8s_{55}s_{58} + 8s_{55}s_{59} - 4s_{55}s_6 - 144s_{55}s_7 - 4s_{55}s_8 - 4s_{55}s_9 -$
 $188.0s_{55} + 8s_{56}s_{57} + 8s_{56}s_{58} + 8s_{56}s_{59} - 4s_{56}s_6 - 4s_{56}s_7 - 144s_{56}s_8 - 4s_{56}$
 $s_9 - 188.0s_{56} + 8s_{57}s_{58} + 8s_{57}s_{59} - 4s_{57}s_6 - 4s_{57}s_7 - 4s_{57}s_8 - 144s_{57}s_9 -$
 $188.0s_{57} + 8s_{58}s_{59} - 4s_{58}s_6 - 4s_{58}s_7 - 4s_{58}s_8 - 4s_{58}s_9 - 188.0s_{58} - 4s_{59}s_6 - 4$
 $s_{59}s_7 - 4s_{59}s_8 - 4s_{59}s_9 - 188.0s_{59} + 4s_6s_7 + 4s_6s_8 + 4s_6s_9 + 188.0s_6 + 8s_{60}$
 $s_{61} + 8s_{60}s_{62} + 8s_{60}s_{63} + 8s_{60}s_{64} + 8s_{60}s_{65} + 8s_{60}s_{66} + 8s_{60}s_{67} + 8s_{60}s_{68}$
 $+ 8s_{60}s_{69} + 8s_{60}s_{70} + 8s_{60}s_{71} - 188.0s_{60} + 8s_{61}s_{62} + 8s_{61}s_{63} + 8s_{61}s_{64} + 8$
 $s_{61}s_{65} + 8s_{61}s_{66} + 8s_{61}s_{67} + 8s_{61}s_{68} + 8s_{61}s_{69} + 8s_{61}s_{70} + 8s_{61}s_{71} - 188.0$
 $s_{61} + 8s_{62}s_{63} + 8s_{62}s_{64} + 8s_{62}s_{65} + 8s_{62}s_{66} + 8s_{62}s_{67} + 8s_{62}s_{68} + 8s_{62}s_{69}$
 $+ 8s_{62}s_{70} + 8s_{62}s_{71} - 188.0s_{62} + 8s_{63}s_{64} + 8s_{63}s_{65} + 8s_{63}s_{66} + 8s_{63}s_{67} + 8$
 $s_{63}s_{68} + 8s_{63}s_{69} + 8s_{63}s_{70} + 8s_{63}s_{71} - 188.0s_{63} + 8s_{64}s_{65} + 8s_{64}s_{66} + 8s_{64}$
 $s_{67} + 8s_{64}s_{68} + 8s_{64}s_{69} + 8s_{64}s_{70} + 8s_{64}s_{71} - 188.0s_{64} + 8s_{65}s_{66} + 8s_{65}s_{67}$
 $+ 8s_{65}s_{68} + 8s_{65}s_{69} + 8s_{65}s_{70} + 8s_{65}s_{71} - 188.0s_{65} + 8s_{66}s_{67} + 8s_{66}s_{68} + 8$
 $s_{66}s_{69} + 8s_{66}s_{70} + 8s_{66}s_{71} - 188.0s_{66} + 8s_{67}s_{68} + 8s_{67}s_{69} + 8s_{67}s_{70} + 8s_{67}$
 $s_{71} - 188.0s_{67} + 8s_{68}s_{69} + 8s_{68}s_{70} + 8s_{68}s_{71} - 188.0s_{68} + 8s_{69}s_{70} + 8s_{69}s_{71} -$
 $188.0s_{69} + 4s_7s_8 + 4s_7s_9 + 188.0s_7 + 8s_{70}s_{71} - 188.0s_{70} - 188.0s_{71} + 4s_8s_9 +$
 $188.0s_8 + 188.0s_9 + 8208.0$