

Got Tensor Contractions?

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1 DEFINITIONS

1. The values of consecutive indices which are not separated by commas are assumed to form an ascending sequence (partially symmetrical storage).
2. Index groups separated by commas run independently.
3. Index ranges:
m,n,l: full occupied orbital range (e.g., [0..99]);
e,f,d: full virtual orbital range (e.g., [100..999]);
I,J,K: a small (active) subrange of the occupied orbital range (e.g., [90..99]);
A,B,C: a small (active) subrange of the virtual orbital range (e.g., [990..999]);
i,j,k: the occupied orbital range excluding the active subrange (e.g., [0..89]);
a,b,c: the virtual orbital range excluding the active subrange (e.g., [100..989]).
4. Despite multiple forms in which S/L/C tensors may appear in contractions, the only unique elements of these tensors are those which have both upper and lower indices ordered in an ascending order (separately).

2 TENSOR EXPRESSIONS

- (1) 3.1.6 : $Z+ = H_{d_1^b}^{l_1^b} S_{l_1^b}^{d_1^b}$
- (2) 3.2.7 : $Z+ = H_{d_1^a}^{l_1^a} S_{l_1^a}^{d_1^a}$
- (3) 9.1.24 : $Z+ = H_{d_1^b d_2^b}^{l_1^b l_2^b} S_{l_1^b l_2^b}^{d_1^b d_2^b}$
- (4) 9.2.25 : $Z+ = H_{d_1^a d_1^b}^{l_1^a l_1^b} S_{l_1^a l_1^b}^{d_1^a d_1^b}$
- (5) 9.3.26 : $Z+ = H_{d_1^a d_2^a}^{l_1^a l_2^a} S_{l_1^a l_2^a}^{d_1^a d_2^a}$
- (6) 18.1.63 : $Z+ = H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{d_1^b} S_{l_2^b}^{d_2^b} \cdot +1/2$
- (7) 18.2.64 : $Z+ = H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{d_1^a} S_{l_1^b}^{d_1^b} \cdot 2/2$
- (8) 18.3.65 : $Z+ = H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{d_1^a} S_{l_2^a}^{d_2^a} \cdot +1/2$
- (9) 1.1.1 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a}^{e_1^a}$
- (10) 4.2.9 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a}^{e_1^a} S_{m_1^a}^{d_1^a}$
- (11) 5.2.11 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a}^{l_1^a} S_{l_1^a}^{e_1^a} \cdot -1/1$
- (12) 6.3.14 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^b}^{e_1^a, l_1^b} S_{l_1^b}^{d_1^b}$

- (13) 6.4.15 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^a}^{e_1^a, l_1^a} S_{l_1^a}^{d_1^a}$
- (14) 10.2.28 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^b}^{l_1^b} S_{m_1^a, l_1^b}^{e_1^a, d_1^b}$
- (15) 10.4.30 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a}^{l_1^a} S_{m_1^a, l_1^a}^{e_1^a, d_1^a}$
- (16) 11.3.33 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a d_1^b}^{e_1^a, l_1^b} S_{m_1^a, l_1^b}^{d_1^a, d_1^b}$
- (17) 11.4.34 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a d_2^a}^{e_1^a, l_1^a} S_{m_1^a, l_1^a}^{d_1^a, d_2^a}$
- (18) 12.3.37 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a l_1^b}^{e_1^a, d_1^b} \cdot -1/1$
- (19) 12.4.38 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a l_2^a}^{e_1^a, d_1^a} \cdot -1/1$
- (20) 19.2.67 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a}^{l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} \cdot -1/1$
- (21) 20.3.70 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_1^b}^{e_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{l_1^b}^{d_1^b}$
- (22) 20.4.71 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{m_1^a}^{d_1^a} S_{l_1^a}^{d_2^a}$
- (23) 21.3.74 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{d_1^b} \cdot -1/1$
- (24) 21.4.75 : $Z_{m_1^a}^{e_1^a} + = H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{d_1^a} \cdot -1/1$
- (25) 25.3.90 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a, l_1^b}^{d_1^a, d_1^b} \cdot -1/1$
- (26) 25.4.91 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_1^a, l_2^a}^{d_1^a, d_2^a} \cdot -1/1$
- (27) 26.3.94 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{l_1^a l_1^b}^{e_1^a, d_1^b} \cdot -1/1$
- (28) 26.4.95 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a}^{d_1^a} S_{l_1^a l_2^a}^{e_1^a, d_2^a} \cdot -1/1$
- (29) 27.2.97 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{d_1^b} S_{m_1^a, l_2^b}^{e_1^a, d_2^b}$
- (30) 27.4.99 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^b, d_1^a}^{l_1^b, l_1^a} S_{l_1^b}^{d_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^a}$
- (31) 27.6.101 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{d_1^a} S_{m_1^a, l_1^b}^{e_1^a, d_1^b}$
- (32) 27.8.103 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{d_1^a} S_{m_1^a, l_2^a}^{e_1^a, d_2^a}$
- (33) 40.3.188 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{l_1^b}^{d_1^b} \cdot -1/1$
- (34) 40.4.189 : $Z_{m_1^a}^{e_1^a} + = H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{l_2^a}^{d_2^a} \cdot -1/1$
- (35) 1.2.2 : $Z_{m_1^b}^{e_1^b} + = H_{m_1^b}^{e_1^b}$
- (36) 4.1.8 : $Z_{m_1^b}^{e_1^b} + = H_{d_1^b}^{e_1^b} S_{m_1^b}^{d_1^b}$
- (37) 5.1.10 : $Z_{m_1^b}^{e_1^b} + = H_{m_1^b}^{l_1^b} S_{l_1^b}^{e_1^b} \cdot -1/1$

$$\begin{aligned}
(38) \quad & 6.1.12 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^b}^{e_1^b, l_1^b} S_{l_1^b}^{d_1^b} \\
(39) \quad & 6.2.13 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^a}^{e_1^b, l_1^a} S_{l_1^a}^{d_1^a} \\
(40) \quad & 10.1.27 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b}^{l_1^b} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \\
(41) \quad & 10.3.29 : Z_{m_1^b}^{e_1^b} + = H_{d_1^a}^{l_1^a} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} \\
(42) \quad & 11.1.31 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b d_2^b}^{e_1^b, l_1^b} S_{m_1^b, l_1^b}^{d_1^b d_2^b} \\
(43) \quad & 11.2.32 : Z_{m_1^b}^{e_1^b} + = H_{d_1^a d_1^b}^{e_1^b, l_1^a} S_{m_1^b, l_1^a}^{d_1^a d_1^b} \\
(44) \quad & 12.1.35 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^b}^{l_1^b l_2^b} S_{l_1^b l_2^b}^{e_1^b, d_1^b} \cdot -1/1 \\
(45) \quad & 12.2.36 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^a}^{l_1^a l_1^b} S_{l_1^a l_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(46) \quad & 19.1.66 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b}^{l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} \cdot -1/1 \\
(47) \quad & 20.1.68 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{m_1^b}^{d_1^b} S_{l_1^b}^{d_2^b} \\
(48) \quad & 20.2.69 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_1^a}^{e_1^b, l_1^a} S_{m_1^b}^{d_1^b} S_{l_1^a}^{d_1^a} \\
(49) \quad & 21.1.72 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^b}^{l_1^b l_2^b} S_{l_1^b l_2^b}^{e_1^b, d_1^b} \cdot -1/1 \\
(50) \quad & 21.2.73 : Z_{m_1^b}^{e_1^b} + = H_{m_1^b, d_1^a}^{l_1^b l_1^a} S_{l_1^b l_1^a}^{e_1^b, d_1^a} \cdot -1/1 \\
(51) \quad & 25.1.88 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b d_2^b}^{l_1^b l_2^b} S_{l_1^b l_2^b}^{e_1^b, d_1^b} S_{m_1^b, l_2^b}^{d_2^b} \cdot -1/1 \\
(52) \quad & 25.2.89 : Z_{m_1^b}^{e_1^b} + = H_{d_1^a d_1^b}^{l_1^a l_1^b} S_{l_1^a l_1^b}^{e_1^b, d_1^a} S_{m_1^b, l_1^a}^{d_1^b} \cdot -1/1 \\
(53) \quad & 26.1.92 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_2^b}^{l_1^b l_2^b} S_{m_1^b}^{d_1^b} S_{l_1^b l_2^b}^{e_1^b, d_2^b} \cdot -1/1 \\
(54) \quad & 26.2.93 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_1^a}^{l_1^a l_1^b} S_{m_1^b}^{d_1^b} S_{l_1^a l_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(55) \quad & 27.1.96 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_2^b}^{l_1^b l_2^b} S_{l_1^b}^{d_1^b} S_{m_1^b, l_2^b}^{e_1^b, d_2^b} \\
(56) \quad & 27.3.98 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_1^a}^{l_1^b l_1^a} S_{l_1^b}^{d_1^b} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} \\
(57) \quad & 27.5.100 : Z_{m_1^b}^{e_1^b} + = H_{d_1^a, d_1^b}^{l_1^a l_1^b} S_{l_1^a}^{d_1^a} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \\
(58) \quad & 27.7.102 : Z_{m_1^b}^{e_1^b} + = H_{d_1^a, d_2^a}^{l_1^a l_2^a} S_{l_1^a}^{d_1^a} S_{m_1^b, l_2^a}^{e_1^b, d_2^a} \\
(59) \quad & 40.1.186 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_2^b}^{l_1^b l_2^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{l_2^b}^{d_2^b} \cdot -1/1 \\
(60) \quad & 40.2.187 : Z_{m_1^b}^{e_1^b} + = H_{d_1^b, d_1^a}^{l_1^b l_1^a} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{l_1^a}^{d_1^a} \cdot -1/1 \\
(61) \quad & 2.2.4 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a m_1^b}^{e_1^a e_1^b}
\end{aligned}$$

$$\begin{aligned}
(62) \quad & 7.2.17 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^a}^{e_1^a e_1^b} S_{m_1^a}^{d_1^a} \cdot -1/1 \\
(63) \quad & 7.3.18 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^b}^{e_1^a e_1^b} S_{m_1^b}^{d_1^b} \\
(64) \quad & 8.2.21 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a m_1^b}^{e_1^b, l_1^a} S_{l_1^a}^{e_1^a} \\
(65) \quad & 8.3.22 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a m_1^b}^{e_1^a, l_1^b} S_{l_1^b}^{e_1^b} \cdot -1/1 \\
(66) \quad & 13.2.40 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^b}^{e_1^b} S_{m_1^a m_1^b}^{e_1^a, d_1^b} \\
(67) \quad & 13.3.41 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^a}^{e_1^a} S_{m_1^a m_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(68) \quad & 14.2.44 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b}^{l_1^b} S_{m_1^a, l_1^b}^{e_1^a e_1^b} \cdot -1/1 \\
(69) \quad & 14.3.45 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a}^{l_1^a} S_{m_1^b, l_1^a}^{e_1^a e_1^b} \\
(70) \quad & 15.2.48 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^a d_1^b}^{e_1^a e_1^b} S_{m_1^a m_1^b}^{d_1^a d_1^b} \\
(71) \quad & 16.2.51 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^b}^{e_1^b, l_1^b} S_{m_1^a, l_1^b}^{e_1^a, d_1^b} \\
(72) \quad & 16.4.53 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^a}^{e_1^b, l_1^a} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} \\
(73) \quad & 16.5.54 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^b}^{e_1^b, l_1^a} S_{m_1^b, l_1^a}^{e_1^a, d_1^b} \cdot -1/1 \\
(74) \quad & 16.6.55 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^a}^{e_1^a, l_1^b} S_{m_1^a, l_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(75) \quad & 16.7.56 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^b}^{e_1^a, l_1^b} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \\
(76) \quad & 16.9.58 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^a}^{e_1^a, l_1^a} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} \\
(77) \quad & 17.2.61 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a m_1^b}^{l_1^a l_1^b} S_{l_1^a l_1^b}^{e_1^a e_1^b} \\
(78) \quad & 22.2.77 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^a, d_1^b}^{e_1^a e_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b}^{d_1^b} \cdot 2/2 \\
(79) \quad & 23.2.80 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^a}^{e_1^b, l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} \cdot -1/1 \\
(80) \quad & 23.3.81 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^b}^{e_1^b, l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^b}^{d_1^b} \\
(81) \quad & 23.4.82 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^b, d_1^a}^{e_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^a}^{d_1^a} \\
(82) \quad & 23.5.83 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a, d_1^b}^{e_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} \cdot -1/1 \\
(83) \quad & 24.2.86 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{m_1^a m_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{e_1^b} \cdot 2/2 \\
(84) \quad & 28.2.105 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^b}^{l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^a m_1^b}^{e_1^a, d_1^b} \cdot -1/1 \\
(85) \quad & 28.3.106 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + = H_{d_1^a}^{l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^a m_1^b}^{e_1^b, d_1^a}
\end{aligned}$$

$$\begin{aligned}
(86) \quad 29.2.109 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b}^{l_1^b} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^b}^{e_1^a e_1^b} \cdot -1/1 \\
(87) \quad 29.3.110 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a}^{l_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^a}^{e_1^a e_1^b} \\
(88) \quad 30.2.113 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a d_1^b}^{e_1^b, l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^a m_1^b}^{d_1^a d_1^b} \\
(89) \quad 30.3.114 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a d_1^b}^{e_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^a m_1^b}^{d_1^a d_1^b} \cdot -1/1 \\
(90) \quad 31.2.117 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^b}^{e_1^a, d_2^b} \\
(91) \quad 31.4.119 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{e_1^b, l_1^a} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} \\
(92) \quad 31.5.120 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{e_1^b, l_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^a}^{e_1^a, d_1^b} \cdot -1/1 \\
(93) \quad 31.6.121 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{e_1^a, l_1^b} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(94) \quad 31.7.122 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{e_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \\
(95) \quad 31.9.124 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^a}^{e_1^b, d_2^a} \\
(96) \quad 32.2.127 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{l_1^b}^{d_1^b} S_{m_1^a m_1^b}^{e_1^a, d_2^b} \cdot -1/1 \\
(97) \quad 32.4.129 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{e_1^b, l_1^a} S_{l_1^a}^{d_1^a} S_{m_1^a m_1^b}^{e_1^a, d_1^b} \cdot -1/1 \\
(98) \quad 32.5.130 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{e_1^a, l_1^b} S_{l_1^b}^{d_1^b} S_{m_1^a m_1^b}^{e_1^b, d_1^a} \\
(99) \quad 32.7.132 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{l_1^a}^{d_1^a} S_{m_1^a m_1^b}^{e_1^b, d_2^a} \\
(100) \quad 33.2.135 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{m_1^a, l_2^b}^{e_1^a, d_1^b} \cdot -1/1 \\
(101) \quad 33.4.137 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^a}^{l_1^b, l_1^a} S_{l_1^b}^{e_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} \cdot -1/1 \\
(102) \quad 33.5.138 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^b, l_1^a} S_{l_1^b}^{e_1^b} S_{m_1^b, l_1^a}^{e_1^a, d_1^b} \\
(103) \quad 33.6.139 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a, l_1^b}^{e_1^b, d_1^a} \\
(104) \quad 33.7.140 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \cdot -1/1 \\
(105) \quad 33.9.142 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_1^b, l_2^a}^{e_1^b, d_1^a} \cdot -1/1 \\
(106) \quad 34.2.145 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{l_1^a l_1^b}^{e_1^a e_1^b} \cdot -1/1 \\
(107) \quad 34.3.146 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^b}^{d_1^b} S_{l_1^a l_1^b}^{e_1^a e_1^b} \\
(108) \quad 35.2.149 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^b}^{l_1^b, l_2^b} S_{l_1^b}^{d_1^b} S_{m_1^a, l_2^b}^{e_1^a e_1^b} \\
(109) \quad 35.3.150 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^b, l_1^a} S_{l_1^b}^{d_1^b} S_{m_1^b, l_1^a}^{e_1^a e_1^b} \cdot -1/1
\end{aligned}$$

$$\begin{aligned}
(110) \quad 35.6.153 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^a}^{d_1^a} S_{m_1^a, l_1^b}^{e_1^a e_1^b} \\
(111) \quad 35.7.154 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{d_1^a} S_{m_1^b, l_2^a}^{e_1^a e_1^b} \cdot -1/1 \\
(112) \quad 36.2.157 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^a, l_1^b}^{e_1^a e_1^b} S_{m_1^b, l_2^b}^{d_1^b d_2^b} \cdot -1/1 \\
(113) \quad 36.4.159 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a, l_1^b}^{e_1^a e_1^b} S_{m_1^b, l_1^a}^{d_1^a d_1^b} \cdot -1/1 \\
(114) \quad 36.5.160 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^b, l_1^a}^{e_1^a e_1^b} S_{m_1^a, l_1^b}^{d_1^a d_1^b} \\
(115) \quad 36.7.162 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^b, l_1^a}^{e_1^a e_1^b} S_{m_1^a, l_2^a}^{d_1^a d_2^a} \\
(116) \quad 37.2.165 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a, l_1^b}^{e_1^a e_1^b} S_{m_1^a m_1^b}^{d_1^a d_1^b} \\
(117) \quad 38.2.168 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^a m_1^b}^{e_1^a, d_1^b} S_{l_1^b, l_2^b}^{e_1^b, d_2^b} \cdot -1/1 \\
(118) \quad 38.4.170 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^a m_1^b}^{e_1^a, d_1^b} S_{l_1^a, l_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(119) \quad 38.5.171 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a m_1^b}^{e_1^b, d_1^a} S_{l_1^a, l_1^b}^{e_1^a, d_1^b} \\
(120) \quad 38.7.173 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a m_1^b}^{e_1^b, d_1^a} S_{l_1^a, l_2^a}^{e_1^a, d_2^a} \\
(121) \quad 39.2.176 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^a, l_1^b}^{e_1^a, d_1^b} S_{m_1^b, l_2^b}^{e_1^b, d_2^b} \cdot 2/2 \\
(122) \quad 39.4.178 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^b, l_1^a}^{e_1^a, d_1^b} S_{m_1^a, l_1^b}^{e_1^b, d_1^a} \cdot -2/2 \\
(123) \quad 39.6.180 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} S_{m_1^a, l_1^b}^{e_1^a, d_1^b} \cdot 2/2 \\
(124) \quad 39.7.181 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^b} S_{m_1^b, l_1^b}^{e_1^b, d_1^a} \cdot 2/2 \\
(125) \quad 39.10.184 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a, l_1^a}^{e_1^a, d_1^b} S_{m_1^b, l_2^a}^{e_1^b, d_2^a} \cdot 2/2 \\
(126) \quad 41.2.191 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b}^{d_1^b} \cdot 2/2 \\
(127) \quad 41.3.192 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b}^{d_1^b} \cdot -2/2 \\
(128) \quad 42.2.195 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{e_1^b} S_{m_1^a}^{d_1^a} \cdot -2/2 \\
(129) \quad 42.3.196 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} \cdot 2/2 \\
(130) \quad 43.2.199 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{e_1^b} S_{m_1^a m_1^b}^{d_1^a d_1^b} \cdot 2/2 \\
(131) \quad 44.2.202 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{m_1^a, l_2^b}^{e_1^a, d_2^b} \cdot -1/1 \\
(132) \quad 44.4.204 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{l_1^b, l_1^a} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} \cdot -1/1 \\
(133) \quad 44.5.205 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^a}^{e_1^a, d_1^b}
\end{aligned}$$

$$\begin{aligned}
(134) \quad 44.6.206 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^b}^{d_1^b} S_{m_1^a, l_1^b}^{e_1^b, d_1^a} \\
(135) \quad 44.7.207 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} \cdot -1/1 \\
(136) \quad 44.9.209 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{m_1^b, l_2^a}^{e_1^b, d_2^a} \cdot -1/1 \\
(137) \quad 45.2.212 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{d_1^b} S_{m_1^a m_1^b}^{e_1^a, d_2^b} \\
(138) \quad 45.4.214 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{l_1^a}^{d_1^a} S_{m_1^a m_1^b}^{e_1^a, d_1^b} \\
(139) \quad 45.5.215 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^a} S_{l_1^a}^{d_1^b} S_{m_1^a m_1^b}^{e_1^b, d_1^a} \cdot -1/1 \\
(140) \quad 45.7.217 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{d_1^a} S_{m_1^a m_1^b}^{e_1^b, d_2^a} \cdot -1/1 \\
(141) \quad 46.2.220 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b}^{d_1^b} S_{l_1^a l_1^b}^{e_1^a e_1^b} \cdot 2/2 \\
(142) \quad 47.2.223 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b}^{d_1^b} S_{l_1^b}^{d_2^b} S_{m_1^a, l_2^b}^{e_1^a e_1^b} \\
(143) \quad 47.3.224 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{l_1^b}^{d_1^b} S_{m_1^b, l_1^a}^{e_1^a e_1^b} \cdot -1/1 \\
(144) \quad 47.6.227 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^b}^{d_1^b} S_{l_1^a}^{d_1^a} S_{m_1^a, l_1^b}^{e_1^a e_1^b} \\
(145) \quad 47.7.228 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a}^{d_1^a} S_{l_1^a}^{d_2^a} S_{m_1^b, l_2^a}^{e_1^a e_1^b} \cdot -1/1 \\
(146) \quad 48.2.231 : Z_{m_1^a m_1^b}^{e_1^a e_1^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{l_1^b}^{e_1^b} S_{m_1^a}^{d_1^a} S_{m_1^b}^{d_1^b} \cdot 4/4 \\
(147) \quad 2.1.3 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a m_2^a}^{e_1^a e_2^a} \\
(148) \quad 7.4.19 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{e_1^a e_2^a} S_{m_2^a}^{d_1^a} \\
(149) \quad 8.4.23 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a m_2^a}^{e_1^a, l_1^a} S_{l_1^a}^{e_2^a} \cdot -1/1 \\
(150) \quad 13.4.42 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a}^{e_1^a} S_{m_1^a m_2^a}^{e_2^a, d_1^a} \cdot -1/1 \\
(151) \quad 14.4.46 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a}^{l_1^a} S_{m_2^a, l_1^a}^{e_1^a e_2^a} \\
(152) \quad 15.3.49 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_2^a}^{e_1^a e_2^a} S_{m_1^a m_2^a}^{d_1^a d_2^a} \\
(153) \quad 16.8.57 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^b}^{e_1^a, l_1^b} S_{m_2^a, l_1^b}^{e_2^a, d_1^b} \\
(154) \quad 16.10.59 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{e_1^a, l_1^a} S_{m_2^a, l_1^a}^{e_2^a, d_1^a} \\
(155) \quad 17.3.62 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a m_2^a}^{l_1^a l_2^a} S_{l_1^a l_2^a}^{e_1^a e_2^a} \\
(156) \quad 22.3.78 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{e_1^a e_2^a} S_{m_1^a}^{d_1^a} S_{m_2^a}^{d_2^a} \cdot +1/2 \\
(157) \quad 23.6.84 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{e_1^a, l_1^a} S_{l_1^a}^{e_2^a} S_{m_2^a}^{d_1^a} \cdot -1/1 \\
(158) \quad 24.3.87 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a m_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{e_2^a} \cdot +1/2
\end{aligned}$$

$$\begin{aligned}
(159) \quad 28.4.107 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a}^{l_1^a} S_{l_1^a}^{e_1^a} S_{m_1^a m_2^a}^{e_2^a, d_1^a} \\
(160) \quad 29.4.111 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a}^{l_1^a} S_{m_1^a}^{d_1^a} S_{m_2^a, l_1^a}^{e_1^a e_2^a} \\
(161) \quad 30.4.115 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_2^a}^{e_1^a, l_1^a} S_{l_1^a}^{e_2^a} S_{m_1^a m_2^a}^{d_1^a d_2^a} \cdot -1/1 \\
(162) \quad 31.8.123 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_1^b}^{e_1^a, l_1^b} S_{m_1^a}^{d_1^a} S_{m_2^a, l_1^b}^{e_2^a, d_1^b} \\
(163) \quad 31.10.125 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{m_1^a}^{d_1^a} S_{m_2^a, l_1^a}^{e_2^a, d_2^a} \\
(164) \quad 32.6.131 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^b, d_1^a}^{e_1^a, l_1^b} S_{l_1^b}^{d_1^b} S_{m_1^a m_2^a}^{e_2^a, d_1^a} \\
(165) \quad 32.8.133 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{l_1^a}^{d_1^a} S_{m_1^a m_2^a}^{e_2^a, d_2^a} \\
(166) \quad 33.8.141 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_2^a, l_1^b}^{e_2^a, d_1^b} \cdot -1/1 \\
(167) \quad 33.10.143 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_2^a, l_2^a}^{e_2^a, d_1^a} \cdot -1/1 \\
(168) \quad 34.4.147 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{l_1^a l_2^a} S_{m_2^a}^{d_1^a} S_{l_1^a l_2^a}^{e_1^a e_2^a} \\
(169) \quad 35.4.151 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^b}^{l_1^b, l_1^a} S_{l_1^b}^{d_1^b} S_{m_2^a, l_1^a}^{e_1^a e_2^a} \cdot -1/1 \\
(170) \quad 35.8.155 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{d_1^a} S_{m_2^a, l_2^a}^{e_1^a e_2^a} \cdot -1/1 \\
(171) \quad 36.6.161 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_1^b}^{l_1^a, l_1^b} S_{m_1^a, l_1^a}^{e_1^a e_2^a} S_{m_2^a, l_1^b}^{d_1^a d_1^b} \cdot -1/1 \\
(172) \quad 36.8.163 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_2^a}^{l_1^a, l_2^a} S_{m_1^a, l_1^a}^{e_1^a e_2^a} S_{m_2^a, l_2^a}^{d_1^a d_2^a} \cdot -1/1 \\
(173) \quad 37.3.166 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_2^a}^{l_1^a l_2^a} S_{l_1^a l_2^a}^{e_1^a e_2^a} S_{m_1^a m_2^a}^{d_1^a d_2^a} \\
(174) \quad 38.6.172 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_1^b}^{l_1^a l_1^b} S_{m_1^a m_2^a}^{e_1^a, d_1^a} S_{l_1^a l_1^b}^{e_2^a, d_1^b} \cdot -1/1 \\
(175) \quad 38.8.174 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a l_2^a} S_{m_1^a m_2^a}^{e_1^a, d_1^a} S_{l_1^a l_2^a}^{e_2^a, d_2^a} \cdot -1/1 \\
(176) \quad 39.3.177 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^a, l_1^b}^{e_1^a, d_1^b} S_{m_2^a, l_2^b}^{e_2^a, d_2^b} \cdot +1/2 \\
(177) \quad 39.8.182 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} S_{m_2^a, l_1^b}^{e_2^a, d_1^b} \cdot 2/2 \\
(178) \quad 39.11.185 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a, l_1^a}^{e_1^a, d_1^a} S_{m_2^a, l_2^a}^{e_2^a, d_2^a} \cdot +1/2 \\
(179) \quad 41.4.193 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{e_1^a, l_1^a} S_{l_1^a}^{e_2^a} S_{m_1^a}^{d_1^a} S_{m_2^a}^{d_2^a} \cdot -1/2 \\
(180) \quad 42.4.197 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{m_1^a, d_1^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{e_2^a} S_{m_2^a}^{d_1^a} \cdot +1/2 \\
(181) \quad 43.3.200 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{e_2^a} S_{m_1^a m_2^a}^{d_1^a d_2^a} \cdot +1/2 \\
(182) \quad 44.8.208 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{m_2^a, l_1^b}^{e_2^a, d_1^b} \cdot -1/1 \\
(183) \quad 44.10.210 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{m_1^a}^{d_1^a} S_{m_2^a, l_2^a}^{e_2^a, d_2^a} \cdot -1/1
\end{aligned}$$

$$\begin{aligned}
(184) \quad 45.6.216 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^a} S_{l_1^b}^{d_1^b} S_{m_1^a m_2^a}^{e_2^a, d_1^a} \cdot -1/1 \\
(185) \quad 45.8.218 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{d_1^a} S_{m_1^a m_2^a}^{e_2^a, d_2^a} \cdot -1/1 \\
(186) \quad 46.3.221 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a}^{d_1^a} S_{m_2^a}^{d_2^a} S_{l_1^a l_2^a}^{e_1^a e_2^a} \cdot +1/2 \\
(187) \quad 47.4.225 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_1^b}^{l_1^b, l_1^a} S_{m_1^a}^{d_1^a} S_{l_1^b}^{d_1^b} S_{m_2^a, l_1^a}^{e_1^a e_2^a} \cdot -1/1 \\
(188) \quad 47.8.229 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^a}^{d_1^a} S_{l_1^a}^{d_2^a} S_{m_2^a, l_2^a}^{e_1^a e_2^a} \cdot -1/1 \\
(189) \quad 48.3.232 : Z_{m_1^a m_2^a}^{e_1^a e_2^a} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{l_1^a}^{e_1^a} S_{l_2^a}^{e_2^a} S_{m_1^a}^{d_1^a} S_{m_2^a}^{d_2^a} \cdot +1/4 \\
(190) \quad 2.3.5 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b m_2^b}^{e_1^b e_2^b} \\
(191) \quad 7.1.16 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{e_1^b e_2^b} S_{m_2^b}^{d_1^b} \\
(192) \quad 8.1.20 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b m_2^b}^{e_1^b, l_1^b} S_{l_1^b}^{e_2^b} \cdot -1/1 \\
(193) \quad 13.1.39 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b}^{e_1^b} S_{m_1^b m_2^b}^{e_2^b, d_1^b} \cdot -1/1 \\
(194) \quad 14.1.43 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b}^{l_1^b} S_{m_2^b, l_1^b}^{e_1^b e_2^b} \\
(195) \quad 15.1.47 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b d_2^b}^{e_1^b e_2^b} S_{m_1^b m_2^b}^{d_1^b d_2^b} \\
(196) \quad 16.1.50 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{e_1^b, l_1^b} S_{m_2^b, l_1^b}^{e_2^b, d_1^b} \\
(197) \quad 16.3.52 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^a}^{e_1^b, l_1^a} S_{m_2^b, l_1^a}^{e_2^b, d_1^a} \\
(198) \quad 17.1.60 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b m_2^b}^{l_1^b l_2^b} S_{l_1^b l_2^b}^{e_1^b e_2^b} \\
(199) \quad 22.1.76 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{e_1^b e_2^b} S_{m_1^b}^{d_1^b} S_{m_2^b}^{d_2^b} \cdot +1/2 \\
(200) \quad 23.1.79 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{e_1^b, l_1^b} S_{l_1^b}^{e_2^b} S_{m_2^b}^{d_1^b} \cdot -1/1 \\
(201) \quad 24.1.85 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b m_2^b}^{l_1^b l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{e_2^b} \cdot +1/2 \\
(202) \quad 28.1.104 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b}^{l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^b m_2^b}^{e_2^b, d_1^b} \\
(203) \quad 29.1.108 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b}^{l_1^b} S_{m_1^b}^{d_1^b} S_{m_2^b, l_1^b}^{e_1^b e_2^b} \\
(204) \quad 30.1.112 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b d_2^b}^{e_1^b, l_1^b} S_{l_1^b}^{e_2^b} S_{m_1^b m_2^b}^{d_1^b d_2^b} \cdot -1/1 \\
(205) \quad 31.1.116 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{m_1^b}^{d_1^b} S_{m_2^b, l_1^b}^{e_2^b, d_2^b} \\
(206) \quad 31.3.118 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_1^a}^{e_1^b, l_1^a} S_{m_1^b}^{d_1^b} S_{m_2^b, l_1^a}^{e_2^b, d_1^a} \\
(207) \quad 32.1.126 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{l_1^b}^{d_1^b} S_{m_1^b m_2^b}^{e_2^b, d_2^b}
\end{aligned}$$

$$\begin{aligned}
(208) \quad 32.3.128 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^a, d_1^b}^{e_1^b, l_1^a} S_{l_1^a}^{d_1^a} S_{m_1^b m_2^b}^{e_2^b, d_1^b} \\
(209) \quad 33.1.134 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{m_2^b, l_2^b}^{e_2^b, d_1^b} \cdot -1/1 \\
(210) \quad 33.3.136 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^a}^{l_1^b, l_1^a} S_{l_1^b}^{e_1^b} S_{m_2^b, l_1^a}^{e_2^b, d_1^a} \cdot -1/1 \\
(211) \quad 34.1.144 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{l_1^b, l_2^b} S_{m_2^b}^{d_1^b} S_{l_1^b l_2^b}^{e_1^b e_2^b} \\
(212) \quad 35.1.148 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{l_1^b, l_2^b} S_{l_1^b}^{d_1^b} S_{m_2^b, l_2^b}^{e_1^b e_2^b} \cdot -1/1 \\
(213) \quad 35.5.152 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^a}^{d_1^a} S_{m_2^b, l_1^b}^{e_1^b e_2^b} \cdot -1/1 \\
(214) \quad 36.1.156 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b, l_1^b}^{e_1^b e_2^b} S_{m_2^b, l_2^b}^{d_1^b d_2^b} \cdot -1/1 \\
(215) \quad 36.3.158 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^b, l_1^b}^{e_1^b e_2^b} S_{m_2^b, l_1^a}^{d_1^a d_1^b} \cdot -1/1 \\
(216) \quad 37.1.164 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b l_2^b}^{e_1^b e_2^b} S_{m_1^b m_2^b}^{d_1^b d_2^b} \\
(217) \quad 38.1.167 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b m_2^b}^{e_1^b, d_1^b} S_{l_1^b l_2^b}^{e_2^b, d_2^b} \cdot -1/1 \\
(218) \quad 38.3.169 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^b m_2^b}^{e_1^b, d_1^b} S_{l_1^a l_1^b}^{e_2^b, d_1^a} \cdot -1/1 \\
(219) \quad 39.1.175 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b, l_1^b}^{e_1^b, d_1^b} S_{m_2^b, l_2^b}^{e_2^b, d_2^b} \cdot +1/2 \\
(220) \quad 39.5.179 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} S_{m_2^b, l_1^b}^{e_2^b, d_1^b} \cdot 2/2 \\
(221) \quad 39.9.183 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^a, d_2^a}^{l_1^a, l_2^a} S_{m_1^b, l_1^a}^{e_1^b, d_1^a} S_{m_2^b, l_2^a}^{e_2^b, d_2^a} \cdot +1/2 \\
(222) \quad 41.1.190 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{e_1^b, l_1^b} S_{l_1^b}^{e_2^b} S_{m_1^b m_2^b}^{d_1^b d_2^b} \cdot -1/2 \\
(223) \quad 42.1.194 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{m_1^b, d_1^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{e_2^b} S_{m_2^b}^{d_1^b d_2^b} \cdot +1/2 \\
(224) \quad 43.1.198 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{e_2^b} S_{m_1^b m_2^b}^{d_1^b d_2^b} \cdot +1/2 \\
(225) \quad 44.1.201 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{m_2^b, l_2^b}^{e_2^b, d_2^b} \cdot -1/1 \\
(226) \quad 44.3.203 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{m_1^b}^{d_1^b} S_{m_2^b, l_1^a}^{e_2^b, d_1^a} \cdot -1/1 \\
(227) \quad 45.1.211 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{d_1^b} S_{m_1^b m_2^b}^{e_2^b, d_2^b} \cdot -1/1 \\
(228) \quad 45.3.213 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^a, d_1^b}^{l_1^a, l_1^b} S_{l_1^b}^{e_1^b} S_{l_1^a}^{d_1^a} S_{m_1^b m_2^b}^{e_2^b, d_1^b} \cdot -1/1 \\
(229) \quad 46.1.219 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b}^{d_1^b} S_{m_2^b}^{d_2^b} S_{l_1^b l_2^b}^{e_1^b e_2^b} \cdot +1/2 \\
(230) \quad 47.1.222 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{m_1^b}^{d_1^b} S_{l_1^b}^{d_2^b} S_{m_2^b, l_2^b}^{e_1^b e_2^b} \cdot -1/1 \\
(231) \quad 47.5.226 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_1^a}^{l_1^a, l_1^b} S_{m_1^b}^{d_1^b} S_{l_1^a}^{d_1^a} S_{m_2^b, l_1^b}^{e_1^b e_2^b} \cdot -1/1 \\
(232) \quad 48.1.230 : Z_{m_1^b m_2^b}^{e_1^b e_2^b} + &= H_{d_1^b, d_2^b}^{l_1^b, l_2^b} S_{l_1^b}^{e_1^b} S_{l_2^b}^{e_2^b} S_{m_1^b}^{d_1^b} S_{m_2^b}^{d_2^b} \cdot +1/4
\end{aligned}$$