

Auxiliary invariants for XY_4

Degree 2; card=1

$$A_1^{0,1,1} := \frac{S_{3x}S_{4x} + S_{3y}S_{4y} + S_{3z}S_{4z}}{\sqrt{3}}$$

Degree 3; card=5

$$A_1^{0,1,2} := \frac{S_{3z}S_{4x}S_{4y} + S_{3y}S_{4x}S_{4z} + S_{3x}S_{4y}S_{4z}}{\sqrt{3}}$$

$$A_1^{0,2,1} := \frac{S_{3y}S_{3z}S_{4x} + S_{3x}S_{3z}S_{4y} + S_{3x}S_{3y}S_{4z}}{\sqrt{3}}$$

$$A_1^{1,0,2} := \frac{1}{6} (3S_{2b}(-S_{4x}^2 + S_{4y}^2) + \sqrt{3}S_{2a}(S_{4x}^2 + S_{4y}^2 - 2S_{4z}^2))$$

$$A_1^{1,1,1} := \frac{1}{6} (3S_{2b}(-S_{3x}S_{4x} + S_{3y}S_{4y}) + \sqrt{3}S_{2a}(S_{3x}S_{4x} + S_{3y}S_{4y} - 2S_{3z}S_{4z}))$$

$$A_1^{1,2,0} := \frac{1}{6} (3S_{2b}(-S_{3x}^2 + S_{3y}^2) + \sqrt{3}S_{2a}(S_{3x}^2 + S_{3y}^2 - 2S_{3z}^2))$$

Degree 4; card=9

$$A_1^{0,1,3} := \frac{S_{3x}S_{4x}^3 + S_{3y}S_{4y}^3 + S_{3z}S_{4z}^3}{\sqrt{3}}$$

$$A_1^{0,2,2} := \frac{S_{3x}^2S_{4x}^2 + S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2}{\sqrt{3}}$$

$$A_2^{0,2,2} := \frac{S_{3y}S_{3z}S_{4y}S_{4z} + S_{3x}S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})}{\sqrt{3}}$$

$$A_1^{0,3,1} := \frac{S_{3x}^3S_{4x} + S_{3y}^3S_{4y} + S_{3z}^3S_{4z}}{\sqrt{3}}$$

$$A_1^{1,1,2} := \frac{1}{6} (3S_{2b}(S_{3y}S_{4x} - S_{3x}S_{4y})S_{4z} + \sqrt{3}S_{2a}(-2S_{3z}S_{4x}S_{4y} + S_{3y}S_{4x}S_{4z} + S_{3x}S_{4y}S_{4z}))$$

$$A_1^{1,2,1} := \frac{1}{6} (3S_{2b}S_{3z}(S_{3y}S_{4x} - S_{3x}S_{4y}) - \sqrt{3}S_{2a}(S_{3y}S_{3z}S_{4x} + S_{3x}S_{3z}S_{4y} - 2S_{3x}S_{3y}S_{4z}))$$

$$A_1^{2,0,2} := \frac{1}{6\sqrt{5}} (6S_{2a}S_{2b}(S_{4x}^2 - S_{4y}^2) + 3\sqrt{3}S_{2a}^2(S_{4x}^2 + S_{4y}^2) + \sqrt{3}S_{2b}^2(S_{4x}^2 + S_{4y}^2 + 4S_{4z}^2))$$

$$A_1^{2,1,1} := \frac{1}{6\sqrt{5}} (6S_{2a}S_{2b}(S_{3x}S_{4x} - S_{3y}S_{4y}) + 3\sqrt{3}S_{2a}^2(S_{3x}S_{4x} + S_{3y}S_{4y}) + \sqrt{3}S_{2b}^2(S_{3x}S_{4x} + S_{3y}S_{4y} + 4S_{3z}S_{4z}))$$

$$A_1^{2,2,0} := \frac{1}{6\sqrt{5}} (6S_{2a}S_{2b}(S_{3x}^2 - S_{3y}^2) + 3\sqrt{3}S_{2a}^2(S_{3x}^2 + S_{3y}^2) + \sqrt{3}S_{2b}^2(S_{3x}^2 + S_{3y}^2 + 4S_{3z}^2))$$

Degree 5; Card=12

$$A_1^{0,2,3} := \frac{1}{\sqrt{6}} \left(S_{3y} S_{3z} S_{4x} (S_{4y}^2 + S_{4z}^2) + S_{3x} (S_{3y} (S_{4x}^2 + S_{4y}^2) S_{4z} + S_{3z} S_{4y} (S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_1^{0,3,2} := \frac{S_{3z}^3 S_{4x} S_{4y} + S_{3y}^3 S_{4x} S_{4z} + S_{3x}^3 S_{4y} S_{4z}}{\sqrt{3}}$$

$$A_1^{1,0,4} := \frac{1}{6} \left(3S_{2b} (-S_{4x}^2 + S_{4y}^2) S_{4z}^2 - \sqrt{3} S_{2a} (S_{4y}^2 S_{4z}^2 + S_{4x}^2 (-2S_{4y}^2 + S_{4z}^2)) \right)$$

$$A_1^{1,1,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y} S_{4y} (S_{4x}^2 - S_{4z}^2) + S_{3x} S_{4x} (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z} (-S_{4x}^2 + S_{4y}^2) S_{4z} + S_{3x} S_{4x} (S_{4y}^2 - S_{4z}^2) + S_{3y} S_{4y} (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,1,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y} S_{4x} S_{4y} + S_{3x} S_{4x} S_{4y}^2 - S_{3z} (S_{4x}^2 + S_{4y}^2) S_{4z}) + \sqrt{3} S_{2b} (S_{3z} (-S_{4x}^2 + S_{4y}^2) S_{4z} + S_{3y} S_{4y} (S_{4x}^2 + 2S_{4z}^2) - S_{3x} S_{4x} (S_{4y}^2 + 2S_{4z}^2)) \right)$$

$$A_1^{1,2,2} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^2 (S_{4x}^2 - S_{4z}^2) + S_{3x}^2 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (-2S_{3z}^2 (S_{4x}^2 - S_{4y}^2) + S_{3x}^2 (S_{4y}^2 - S_{4z}^2) + S_{3y}^2 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,2,2} := \frac{1}{6} \left(3S_{2b} S_{3z} (-S_{3x} S_{4x} + S_{3y} S_{4y}) S_{4z} - \sqrt{3} S_{2a} (-2S_{3x} S_{3y} S_{4x} S_{4y} + S_{3x} S_{3z} S_{4x} S_{4z} + S_{3y} S_{3z} S_{4y} S_{4z}) \right)$$

$$A_1^{1,3,1} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^2 S_{4x} - S_{3y}^2 S_{3z} S_{4z} + S_{3x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (-S_{3x} (S_{3y}^2 + 2S_{3z}^2) S_{4x} + S_{3y} S_{3z} (2S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) \right)$$

$$A_2^{1,3,1} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} (S_{3y}^2 - S_{3z}^2) S_{4x} + S_{3x}^2 S_{3y} S_{4y} - S_{3y} S_{3z}^2 S_{4y}) + \sqrt{3} S_{2b} (S_{3x} (S_{3y}^2 - S_{3z}^2) S_{4x} + S_{3y} S_{3z} (S_{3z} S_{4y} + 2S_{3y} S_{4z}) - S_{3x}^2 (S_{3y} S_{4y} + 2S_{3z} S_{4z})) \right)$$

$$A_1^{1,4,0} := \frac{1}{6} \left(3S_{2b} (-S_{3x}^2 + S_{3y}^2) S_{3z}^2 - \sqrt{3} S_{2a} (S_{3y}^2 S_{3z}^2 + S_{3x}^2 (-2S_{3y}^2 + S_{3z}^2)) \right)$$

$$A_1^{2,1,2} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} (-S_{3y} S_{4x} + S_{3x} S_{4y}) S_{4z} + 3\sqrt{3} S_{2a}^2 (S_{3y} S_{4x} + S_{3x} S_{4y}) S_{4z} + \sqrt{3} S_{2b}^2 (4S_{3z} S_{4x} S_{4y} + S_{3y} S_{4x} S_{4z} + S_{3x} S_{4y} S_{4z}) \right)$$

$$A_1^{2,2,1} := \frac{1}{6\sqrt{11}} \left(6S_{2a} S_{2b} S_{3z} (-S_{3y} S_{4x} + S_{3x} S_{4y}) + 3\sqrt{3} S_{2a}^2 (S_{3y} S_{3z} S_{4x} + S_{3x} S_{3z} S_{4y} + 2S_{3x} S_{3y} S_{4z}) + \sqrt{3} S_{2b}^2 (5S_{3y} S_{3z} S_{4x} + 5S_{3x} S_{3z} S_{4y} + 2S_{3x} S_{3y} S_{4z}) \right)$$

Degree 6; Card=18

$$A_1^{0,2,4} := \frac{S_{3x}^2 S_{4x}^4 + S_{3y}^2 S_{4y}^4 + S_{3z}^2 S_{4z}^4}{\sqrt{3}}$$

$$A_1^{0,3,3} := \frac{S_{3x}^3 S_{4x}^3 + S_{3y}^3 S_{4y}^3 + S_{3z}^3 S_{4z}^3}{\sqrt{3}}$$

$$A_2^{0,3,3} := \frac{1}{\sqrt{6}} \left(S_{3x}^2 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y} S_{4y} + S_{3z} S_{4z}) + S_{3x} S_{4x} (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2) \right)$$

$$A_1^{0,4,2} := \frac{S_{3x}^4 S_{4x}^2 + S_{3y}^4 S_{4y}^2 + S_{3z}^4 S_{4z}^2}{\sqrt{3}}$$

$$A_1^{1,1,4} := \frac{1}{6\sqrt{2}} \left(\sqrt{3} S_{2b} \left(-2S_{3z} S_{4x}^3 S_{4y} + 2S_{3z} S_{4x} S_{4y}^3 - S_{3y} S_{4x}^3 S_{4z} + S_{3x} S_{4y}^3 S_{4z} + S_{3y} S_{4x} S_{4z}^3 - S_{3x} S_{4y} S_{4z}^3 \right) + \right. \\ \left. 3S_{2a} S_{4z} \left(S_{3x} S_{4y} \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y} \left(S_{4x}^3 - S_{4x} S_{4z}^2 \right) \right) \right)$$

$$A_1^{1,2,3} := \frac{1}{6\sqrt{2}} \left(-3S_{2a} \left(S_{3y} S_{3z} S_{4x} S_{4y}^2 + S_{3x} \left(S_{3z} S_{4x}^2 S_{4y} - S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) \right) + \right. \\ \left. \sqrt{3} S_{2b} \left(S_{3y} S_{3z} S_{4x} \left(S_{4y}^2 + 2S_{4z}^2 \right) - S_{3x} \left(S_{3y} \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3z} S_{4y} \left(S_{4x}^2 + 2S_{4z}^2 \right) \right) \right) \right)$$

$$A_2^{1,2,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} S_{4z} \left(-S_{3y} S_{3z} S_{4x} S_{4z} + S_{3x} \left(S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) - S_{3z} S_{4y} S_{4z} \right) \right) + \right. \\ \left. \sqrt{3} S_{2b} \left(S_{3y} S_{3z} S_{4x} \left(2S_{4y}^2 + S_{4z}^2 \right) - S_{3x} \left(S_{3y} \left(S_{4x}^2 - S_{4y}^2 \right) S_{4z} + S_{3z} S_{4y} \left(2S_{4x}^2 + S_{4z}^2 \right) \right) \right) \right)$$

$$A_1^{1,3,2} := \frac{1}{6\sqrt{2}} \left(-3S_{2a} \left(S_{3y}^2 S_{3z} S_{4x} S_{4y} - S_{3x} S_{3y}^2 S_{4y} S_{4z} + S_{3x}^2 S_{4x} \left(S_{3z} S_{4y} - S_{3y} S_{4z} \right) \right) + \right. \\ \left. \sqrt{3} S_{2b} \left(-S_{3x} \left(S_{3y}^2 + 2S_{3z}^2 \right) S_{4y} S_{4z} + S_{3y} S_{3z} S_{4x} \left(S_{3y} S_{4y} + 2S_{3z} S_{4z} \right) + S_{3x}^2 \left(-S_{3z} S_{4x} S_{4y} + S_{3y} S_{4x} S_{4z} \right) \right) \right)$$

$$A_2^{1,3,2} := \frac{1}{6\sqrt{2}} \left(3S_{2a} \left(S_{3x}^2 S_{3y} S_{4x} - S_{3y} S_{3z}^2 S_{4x} + S_{3x} \left(S_{3y} - S_{3z}^2 \right) S_{4y} \right) S_{4z} + \right. \\ \left. \sqrt{3} S_{2b} \left(S_{3x} \left(S_{3y}^2 - S_{3z}^2 \right) S_{4y} S_{4z} - S_{3x}^2 S_{4x} \left(2S_{3z} S_{4y} + S_{3y} S_{4z} \right) + S_{3y} S_{3z} S_{4x} \left(2S_{3y} S_{4y} + S_{3z} S_{4z} \right) \right) \right)$$

$$A_1^{1,4,1} := \frac{1}{6\sqrt{2}} \left(-3S_{2a} \left(S_{3x}^3 S_{3z} S_{4y} - S_{3x}^3 S_{3y} S_{4z} + S_{3y}^3 \left(S_{3z} S_{4x} - S_{3x} S_{4z} \right) \right) + \right. \\ \left. \sqrt{3} S_{2b} \left(-S_{3z} \left(S_{3x}^3 + 2S_{3x} S_{3z}^2 \right) S_{4y} + S_{3y}^3 \left(S_{3z} S_{4x} - S_{3x} S_{4z} \right) + S_{3y} \left(2S_{3z}^3 S_{4x} + S_{3x}^3 S_{4z} \right) \right) \right)$$

$$A_1^{2,0,4} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} \left(S_{4x}^4 - S_{4y}^4 \right) + 3\sqrt{3} S_{2a}^2 \left(S_{4x}^4 + S_{4y}^4 \right) + \sqrt{3} S_{2b}^2 \left(S_{4x}^4 + S_{4y}^4 + 4S_{4z}^4 \right) \right)$$

$$A_1^{2,1,3} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} \left(S_{3x} S_{4x}^3 - S_{3y} S_{4y}^3 \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3x} S_{4x}^3 + S_{3y} S_{4y}^3 \right) + \sqrt{3} S_{2b}^2 \left(S_{3x} S_{4x}^3 + S_{3y} S_{4y}^3 + 4S_{3z} S_{4z}^3 \right) \right)$$

$$A_2^{2,1,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} \left(S_{3y} S_{4x}^2 S_{4y} - S_{3x} S_{4x} S_{4y}^2 + S_{3z} \left(S_{4x}^2 - S_{4y}^2 \right) S_{4z} \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3y} S_{4x}^2 S_{4y} + S_{3x} S_{4x} S_{4y}^2 + \right. \right. \\ \left. \left. S_{3z} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) + \sqrt{3} S_{2b}^2 \left(S_{3z} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3y} S_{4y} \left(S_{4x}^2 + 4S_{4z}^2 \right) + S_{3x} S_{4x} \left(S_{4y}^2 + 4S_{4z}^2 \right) \right) \right)$$

$$A_1^{2,2,2} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} \left(S_{3x}^2 S_{4x}^2 - S_{3y}^2 S_{4y}^2 \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3x}^2 S_{4x}^2 + S_{3y}^2 S_{4y}^2 \right) + \sqrt{3} S_{2b}^2 \left(S_{3x}^2 S_{4x}^2 + S_{3y}^2 S_{4y}^2 + 4S_{3z}^2 S_{4z}^2 \right) \right)$$

$$A_2^{2,2,2} := \frac{1}{6\sqrt{11}} \left(6S_{2a} S_{2b} S_{3z} \left(S_{3x} S_{4x} - S_{3y} S_{4y} \right) S_{4z} + 3\sqrt{3} S_{2a}^2 \left(S_{3y} S_{3z} S_{4y} S_{4z} + S_{3x} S_{4x} \left(2S_{3y} S_{4y} + S_{3z} S_{4z} \right) \right) + \right. \\ \left. \sqrt{3} S_{2b}^2 \left(5S_{3y} S_{3z} S_{4y} S_{4z} + S_{3x} S_{4x} \left(2S_{3y} S_{4y} + 5S_{3z} S_{4z} \right) \right) \right)$$

$$A_1^{2,3,1} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} \left(S_{3x}^3 S_{4x} - S_{3y}^3 S_{4y} \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3x}^3 S_{4x} + S_{3y}^3 S_{4y} \right) + \sqrt{3} S_{2b}^2 \left(S_{3x}^3 S_{4x} + S_{3y}^3 S_{4y} + 4S_{3z}^3 S_{4z} \right) \right)$$

$$A_2^{2,3,1} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} \left(-S_{3x} S_{3y}^2 S_{4x} - S_{3y}^2 S_{3z} S_{4z} + S_{3x}^2 \left(S_{3y} S_{4y} + S_{3z} S_{4z} \right) \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3x} S_{3y}^2 S_{4x} + S_{3y}^2 S_{3z} S_{4z} + \right. \right. \\ \left. \left. S_{3x}^2 \left(S_{3y} S_{4y} + S_{3z} S_{4z} \right) \right) + \sqrt{3} S_{2b}^2 \left(S_{3x} \left(S_{3y}^2 + 4S_{3z}^2 \right) S_{4x} + S_{3y} S_{3z} \left(4S_{3z} S_{4y} + S_{3y} S_{4z} \right) + S_{3x}^2 \left(S_{3y} S_{4y} + S_{3z} S_{4z} \right) \right) \right)$$

$$A_1^{2,4,0} := \frac{1}{6\sqrt{5}} \left(6S_{2a} S_{2b} \left(S_{3x}^4 - S_{3y}^4 \right) + 3\sqrt{3} S_{2a}^2 \left(S_{3x}^4 + S_{3y}^4 \right) + \sqrt{3} S_{2b}^2 \left(S_{3x}^4 + S_{3y}^4 + 4S_{3z}^4 \right) \right)$$

Degree 7; Card=21

$$A_1^{0,3,4} := \frac{1}{\sqrt{6}} \left(S_{3x}^2 S_{4x}^3 (S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y} S_{4y}^3 + S_{3z} S_{4z}^3) + S_{3x} (S_{3y}^2 S_{4y}^3 S_{4z} + S_{3z}^2 S_{4y} S_{4z}^3) \right)$$

$$A_1^{0,4,3} := \frac{1}{\sqrt{6}} \left(S_{3x}^3 S_{4x}^2 (S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3x} S_{4y} S_{4z} (S_{3y}^3 S_{4y} + S_{3z}^3 S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2) \right)$$

$$A_1^{1,1,5} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y} S_{4y}^3 (S_{4x}^2 - S_{4z}^2) + S_{3x} S_{4x}^3 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z} (-S_{4x}^2 + S_{4y}^2) S_{4z}^3 + S_{3x} S_{4x}^3 (S_{4y}^2 - S_{4z}^2) + S_{3y} S_{4y}^3 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_1^{1,2,4} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^2 S_{4y}^2 (S_{4x}^2 - S_{4z}^2) + S_{3x}^2 S_{4x}^2 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z}^2 (-S_{4x}^2 + S_{4y}^2) S_{4z}^2 + S_{3x}^2 S_{4x}^2 (S_{4y}^2 - S_{4z}^2) + S_{3y}^2 S_{4y}^2 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,2,4} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (-S_{3y} S_{3z} S_{4y}^3 S_{4z} + S_{3x} (S_{3y} S_{4x} S_{4y} (S_{4x}^2 + S_{4y}^2) - S_{3z} S_{4x}^3 S_{4z})) + \sqrt{3} S_{2b} (S_{3y} S_{3z} S_{4y} S_{4z} (S_{4y}^2 + 2S_{4z}^2) + S_{3x} S_{4x} (S_{3y} S_{4y} (S_{4x}^2 - S_{4y}^2) - S_{3z} S_{4z} (S_{4x}^2 + 2S_{4z}^2))) \right)$$

$$A_1^{1,3,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^3 S_{4y} (S_{4x}^2 - S_{4z}^2) + S_{3x}^3 S_{4x} (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z}^3 (-S_{4x}^2 + S_{4y}^2) S_{4z} + S_{3x}^3 S_{4x} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 S_{4y} (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,3,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^2 S_{4x} S_{4y}^2 - S_{3y}^2 S_{3z} S_{4y}^2 S_{4z} + S_{3x}^2 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (S_{3x}^2 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y} S_{4y} + 2S_{3z} S_{4z}) - S_{3x} S_{4x} (S_{3y}^2 S_{4y}^2 + 2S_{3z}^2 S_{4z}^2)) \right)$$

$$A_3^{1,3,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^2 S_{4x}^3 - S_{3y}^2 S_{3z} S_{4z}^3 + S_{3x}^2 (S_{3y} S_{4y}^3 - S_{3z} S_{4z}^3)) + \sqrt{3} S_{2b} (-S_{3x} (S_{3y}^2 + 2S_{3z}^2) S_{4x}^3 + S_{3y} S_{3z} (2S_{3z} S_{4y}^3 + S_{3y} S_{4z}^3) + S_{3x}^2 (S_{3y} S_{4y}^3 - S_{3z} S_{4z}^3)) \right)$$

$$A_4^{1,3,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} (S_{3y}^2 - S_{3z}^2) S_{4x}^3 + S_{3x}^2 S_{3y} S_{4y}^3 - S_{3y} S_{3z}^2 S_{4y}^3) + \sqrt{3} S_{2b} (S_{3x} (S_{3y}^2 - S_{3z}^2) S_{4x}^3 + S_{3y} S_{3z} (S_{3z} S_{4y}^3 + 2S_{3y} S_{4z}^3) - S_{3x}^2 (S_{3y} S_{4y}^3 + 2S_{3z} S_{4z}^3)) \right)$$

$$A_1^{1,4,2} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^4 (S_{4x}^2 - S_{4z}^2) + S_{4x}^4 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (-2S_{3z}^4 (S_{4x}^2 - S_{4y}^2) + S_{3x}^4 (S_{4y}^2 - S_{4z}^2) + S_{3y}^4 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,4,2} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^3 S_{4x} S_{4y} - S_{3y}^3 S_{3z} S_{4y} S_{4z} + S_{3x}^3 S_{4x} (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (S_{3y} S_{3z} (S_{3y}^2 + 2S_{3z}^2) S_{4y} S_{4z} + S_{3x}^3 S_{4x} (S_{3y} S_{4y} - S_{3z} S_{4z}) - S_{3x} S_{4x} (S_{3y}^3 S_{4y} + 2S_{3z}^3 S_{4z})) \right)$$

$$A_1^{1,5,1} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^4 S_{4x} - S_{4y}^4 S_{3z} S_{4z} + S_{3x}^4 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (-S_{3x} (S_{3y}^4 + 2S_{3z}^4) S_{4x} + 2S_{3y} S_{3z}^4 S_{4y} + S_{3y}^4 S_{3z} S_{4z} + S_{3x}^4 (S_{3y} S_{4y} - S_{3z} S_{4z})) \right)$$

$$A_1^{2,1,4} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (S_{3z} S_{4x}^3 S_{4y} - S_{3z} S_{4x} S_{4y}^3 + S_{3y} S_{4x}^3 S_{4z} - S_{3x} S_{4y}^3 S_{4z}) + 3\sqrt{3} S_{2a}^2 (S_{3z} S_{4x} S_{4y} (S_{4x}^2 + S_{4y}^2) + (S_{3y} S_{4x}^3 + S_{3x} S_{4y}^3) S_{4z}) + \sqrt{3} S_{2b}^2 (S_{3z} S_{4x} S_{4y} (S_{4x}^2 + S_{4y}^2) + S_{4z} (S_{3y} S_{4x}^3 + S_{3x} S_{4y}^3 + 4S_{3y} S_{4x} S_{4z}^2 + 4S_{3x} S_{4y} S_{4z}^2)) \right)$$

$$A_1^{2,2,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(-S_{3y}S_{3z}S_{4x}S_{4y}^2 + S_{3x} \left(S_{3z}S_{4x}^2S_{4y} + S_{3y} \left(S_{4x}^2 - S_{4y}^2 \right) S_{4z} \right) \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3y}S_{3z}S_{4x}S_{4y}^2 + \right. \right. \\ \left. \left. S_{3x} \left(S_{3z}S_{4x}^2S_{4y} + S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3y}S_{3z}S_{4x} \left(S_{4y}^2 + 4S_{4z}^2 \right) + \right. \right. \\ \left. \left. S_{3x} \left(S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3z}S_{4y} \left(S_{4x}^2 + 4S_{4z}^2 \right) \right) \right) \right)$$

$$A_2^{2,2,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b}S_{4z} \left(-S_{3y}S_{3z}S_{4x}S_{4z} + S_{3x} \left(S_{3y} \left(-S_{4x}^2 + S_{4y}^2 \right) + S_{3z}S_{4y}S_{4z} \right) \right) + \right. \\ \left. 3\sqrt{3}S_{2a}^2S_{4z} \left(S_{3y}S_{3z}S_{4x}S_{4z} + S_{3x} \left(S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) + S_{3z}S_{4y}S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3y}S_{3z}S_{4x} \left(4S_{4y}^2 + S_{4z}^2 \right) + \right. \right. \\ \left. \left. S_{3x} \left(S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3z}S_{4y} \left(4S_{4x}^2 + S_{4z}^2 \right) \right) \right) \right)$$

$$A_1^{2,3,2} := \frac{1}{6\sqrt{5}} \left(6S_{2a}S_{2b} \left(-S_{3y}^3S_{4x} + S_{3x}^3S_{4y} \right) S_{4z} + 3\sqrt{3}S_{2a}^2 \left(S_{3y}^3S_{4x} + S_{3x}^3S_{4y} \right) S_{4z} + \right. \\ \left. \sqrt{3}S_{2b}^2 \left(4S_{3z}^3S_{4x}S_{4y} + S_{3y}^3S_{4x}S_{4z} + S_{3x}^3S_{4y}S_{4z} \right) \right)$$

$$A_2^{2,3,2} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(-S_{3y}^2S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^2S_{4y}S_{4z} + S_{3x}^2S_{4x} \left(S_{3z}S_{4y} + S_{3y}S_{4z} \right) \right) + \right. \\ \left. 3\sqrt{3}S_{2a}^2 \left(S_{3y}^2S_{3z}S_{4x}S_{4y} + S_{3x}S_{3y}^2S_{4y}S_{4z} + S_{3x}^2S_{4x} \left(S_{3z}S_{4y} + S_{3y}S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3x} \left(S_{3y}^2 + 4S_{3z}^2 \right) S_{4y}S_{4z} + \right. \right. \\ \left. \left. S_{3x}^2S_{4x} \left(S_{3z}S_{4y} + S_{3y}S_{4z} \right) + S_{3y}S_{3z}S_{4x} \left(S_{3y}S_{4y} + 4S_{3z}S_{4z} \right) \right) \right)$$

$$A_1^{2,4,1} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(S_{3x}^3S_{3z}S_{4y} + S_{3x}^3S_{3y}S_{4z} - S_{3y}^3 \left(S_{3z}S_{4x} + S_{3x}S_{4z} \right) \right) + \right. \\ \left. 3\sqrt{3}S_{2a}^2 \left(S_{3x}^3S_{3z}S_{4y} + S_{3x}^3S_{3y}S_{4z} + S_{3y}^3 \left(S_{3z}S_{4x} + S_{3x}S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3x}S_{3z} \left(S_{3x}^2 + 4S_{3z}^2 \right) S_{4y} + \right. \right. \\ \left. \left. S_{3y}^3 \left(S_{3z}S_{4x} + S_{3x}S_{4z} \right) + S_{3y} \left(4S_{3z}^3S_{4x} + S_{3x}^3S_{4z} \right) \right) \right)$$

$$A_1^{3,1,3} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(8S_{3z} \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3x}S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}S_{4y} \left(-S_{4x}^2 + S_{4z}^2 \right) \right) - \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}S_{4x} \left(-S_{4y}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_1^{3,2,2} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}^2 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}^2 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(-8S_{3z}^2 \left(S_{4x}^2 - S_{4y}^2 \right) + S_{3x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}^2 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) - \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}^2 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2 \left(-S_{4y}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_1^{3,3,1} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3x}S_{3y}^2S_{4x} - S_{3y}^2S_{3z}S_{4z} + S_{3x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3x}S_{3y}^2S_{4x} - S_{3y}^2S_{3z}S_{4z} + \right. \right. \\ \left. \left. S_{3x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9\sqrt{3}S_{2a}^2S_{2b} \left(-S_{3x}S_{3y}^2S_{4x} + S_{3y}^2S_{3z}S_{4z} + S_{3x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(-S_{3x} \left(S_{3y}^2 + 8S_{3z}^2 \right) S_{4x} + S_{3y}S_{3z} \left(8S_{3z}S_{4y} + S_{3y}S_{4z} \right) + S_{3x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) \right)$$

Degree 8; Card=24

$$A_1^{0,3,5} := \frac{1}{\sqrt{6}} \left(S_{3x}^2S_{4x}^4 \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) + S_{3y}S_{3z}S_{4y}S_{4z} \left(S_{3y}S_{4y}^3 + S_{3z}S_{4z}^3 \right) + S_{3x}S_{4x} \left(S_{3y}^2S_{4y}^4 + S_{3z}^2S_{4z}^4 \right) \right)$$

$$A_1^{0,4,4} := \frac{S_{3x}^4S_{4x}^4 + S_{3y}^4S_{4y}^4 + S_{3z}^4S_{4z}^4}{\sqrt{3}}$$

$$A_2^{0,4,4} := \frac{1}{\sqrt{6}} \left(S_{3y}^3S_{3z}S_{4y}^3S_{4z} + S_{3y}S_{3z}^3S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) + S_{3x}S_{4x} \left(S_{3y}^3S_{4y} + S_{3z}^3S_{4z} \right) \right)$$

$$A_1^{0,5,3} := \frac{1}{\sqrt{6}} (S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y}^3 S_{4y} + S_{3z}^3 S_{4z}) + S_{3x} S_{4x} (S_{3y}^4 S_{4y}^2 + S_{3z}^4 S_{4z}^2))$$

$$A_1^{1,2,5} := \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y} S_{3z} S_{4x} S_{4y}^4 + S_{3x} (S_{3z} S_{4x}^4 S_{4y} - S_{3y} (S_{4x}^4 + S_{4y}^4) S_{4z})) + \sqrt{3} S_{2b} (S_{3y} S_{3z} S_{4x} (S_{4y}^4 + 2S_{4z}^4) - S_{3x} (S_{3y} (-S_{4x}^4 + S_{4y}^4) S_{4z} + S_{3z} S_{4y} (S_{4x}^4 + 2S_{4z}^4))))$$

$$A_1^{1,3,4} := \frac{1}{6\sqrt{2}} (3S_{2a} S_{4z} (S_{3x}^3 S_{4y} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 (S_{4x}^3 - S_{4x} S_{4z}^2)) + \sqrt{3} S_{2b} (S_{3z}^3 (-2S_{4x}^3 S_{4y} + 2S_{4x} S_{4y}^3) + S_{3x}^3 S_{4y} S_{4z} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 (-S_{4x}^3 S_{4z} + S_{4x} S_{4z}^3)))$$

$$A_2^{1,3,4} := \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y}^2 S_{3z} S_{4x} S_{4y}^3 - S_{3x} S_{3y}^2 S_{4y}^3 S_{4z} + S_{3x}^2 S_{4x}^3 (S_{3z} S_{4y} - S_{3y} S_{4z})) + \sqrt{3} S_{2b} (S_{3x}^2 S_{4x}^3 (-S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y} S_{4y}^3 + 2S_{3z} S_{4z}^3) - S_{3x} (S_{3y}^2 S_{4y}^3 S_{4z} + 2S_{3z}^2 S_{4y} S_{4z}^3)))$$

$$A_1^{1,4,3} := \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y}^3 S_{3z} S_{4x} S_{4y}^2 - S_{3x} S_{3y}^3 S_{4y}^2 S_{4z} + S_{3x}^3 S_{4x}^2 (S_{3z} S_{4y} - S_{3y} S_{4z})) + \sqrt{3} S_{2b} (S_{3x}^3 S_{4x}^2 (-S_{3z} S_{4y} + S_{3y} S_{4z}) - S_{3x} S_{4y} S_{4z} (S_{3y}^3 S_{4y} + 2S_{3z}^3 S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y}^2 S_{4y}^2 + 2S_{3z}^2 S_{4z}^2)))$$

$$A_2^{1,4,3} := \frac{1}{6\sqrt{2}} (3S_{2a} S_{4z} (S_{3x} S_{3y}^3 S_{4x}^2 - S_{3y}^3 S_{3z} S_{4x} S_{4z} + S_{3x}^3 S_{4y} (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (-S_{3x} S_{4x}^2 (2S_{3z}^3 S_{4y} + S_{3y}^3 S_{4z}) + S_{3x}^3 S_{4y} S_{4z} (S_{3y} S_{4y} - S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4x} (2S_{3z}^2 S_{4y}^2 + S_{3y}^2 S_{4z}^2)))$$

$$A_1^{1,5,2} := \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y}^4 S_{3z} S_{4x} S_{4y} - S_{3x} S_{3y}^4 S_{4y} S_{4z} + S_{3x}^4 S_{4x} (S_{3z} S_{4y} - S_{3y} S_{4z})) + \sqrt{3} S_{2b} (-S_{3x} (S_{3y}^4 + 2S_{3z}^4) S_{4y} S_{4z} + S_{3y} S_{3z} S_{4x} (S_{3y}^3 S_{4y} + 2S_{3z}^3 S_{4z}) + S_{3x}^4 (-S_{3z} S_{4x} S_{4y} + S_{3y} S_{4x} S_{4z})))$$

$$A_1^{2,1,5} := \frac{1}{6\sqrt{10}} (6S_{2a} S_{2b} (S_{3y} S_{4x}^4 S_{4y} - S_{3x} S_{4x} S_{4y}^4 + S_{3z} (S_{4x}^4 - S_{4y}^4) S_{4z}) + 3\sqrt{3} S_{2a}^2 (S_{3y} S_{4x}^4 S_{4y} + S_{3x} S_{4x} S_{4y}^4 + S_{3z} (S_{4x}^4 + S_{4y}^4) S_{4z}) + \sqrt{3} S_{2b}^2 (S_{3z} (S_{4x}^4 + S_{4y}^4) S_{4z} + S_{3y} S_{4y} (S_{4x}^4 + 4S_{4z}^4) + S_{3x} S_{4x} (S_{4y}^4 + 4S_{4z}^4)))$$

$$A_1^{2,2,4} := \frac{1}{6\sqrt{5}} (6S_{2a} S_{2b} (S_{3x}^2 S_{4x}^4 - S_{3y}^2 S_{4y}^4) + 3\sqrt{3} S_{2a}^2 (S_{3x}^2 S_{4x}^4 + S_{3y}^2 S_{4y}^4) + \sqrt{3} S_{2b}^2 (S_{3x}^2 S_{4x}^4 + S_{3y}^2 S_{4y}^4 + 4S_{3z}^2 S_{4z}^4))$$

$$A_2^{2,2,4} := \frac{1}{6\sqrt{10}} (6S_{2a} S_{2b} (-S_{3y} S_{3z} S_{4y}^3 S_{4z} + S_{3x} (S_{3y} S_{4x} S_{4y} (S_{4x}^2 - S_{4y}^2) + S_{3z} S_{4x}^3 S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3y} S_{3z} S_{4y}^3 S_{4z} + S_{3x} (S_{3y} S_{4x} S_{4y} (S_{4x}^2 + S_{4y}^2) + S_{3z} S_{4x}^3 S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3y} S_{3z} S_{4y} S_{4z} (S_{4y}^2 + 4S_{4z}^2) + S_{3x} S_{4x} (S_{3y} S_{4y} (S_{4x}^2 + S_{4y}^2) + S_{3z} S_{4z} (S_{4x}^2 + 4S_{4z}^2))))$$

$$A_1^{2,3,3} := \frac{1}{6\sqrt{5}} (6S_{2a} S_{2b} (S_{3x}^3 S_{4x}^3 - S_{3y}^3 S_{4y}^3) + 3\sqrt{3} S_{2a}^2 (S_{3x}^3 S_{4x}^3 + S_{3y}^3 S_{4y}^3) + \sqrt{3} S_{2b}^2 (S_{3x}^3 S_{4x}^3 + S_{3y}^3 S_{4y}^3 + 4S_{3z}^3 S_{4z}^3))$$

$$A_2^{2,3,3} := \frac{1}{6\sqrt{10}} (6S_{2a} S_{2b} (S_{3x} S_{4x} - S_{3y} S_{4y}) (S_{3y} S_{3z} S_{4y} S_{4z} + S_{3x} S_{4x} (S_{3y} S_{4y} + S_{3z} S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3x} S_{3y} S_{4x} S_{4y}^2 + S_{3y}^2 S_{3z} S_{4y}^2 S_{4z} + S_{3x}^2 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3x}^2 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y} S_{4y} + 4S_{3z} S_{4z}) + S_{3x} S_{4x} (S_{3y}^2 S_{4y}^2 + 4S_{3z}^2 S_{4z}^2)))$$

$$A_3^{2,3,3} := \frac{1}{6\sqrt{10}} (6S_{2a} S_{2b} (-S_{3x} S_{3y}^2 S_{4x}^3 - S_{3y}^2 S_{3z} S_{4z}^3 + S_{3x}^2 (S_{3y} S_{4y}^3 + S_{3z} S_{4z}^3)) + 3\sqrt{3} S_{2a}^2 (S_{3x} S_{3y}^2 S_{4x}^3 + S_{3y}^2 S_{3z} S_{4z}^3 + S_{3x}^2 (S_{3y} S_{4y}^3 + S_{3z} S_{4z}^3)) + \sqrt{3} S_{2b}^2 (S_{3x} (S_{3y}^2 + 4S_{3z}^2) S_{4x}^3 + S_{3y} S_{3z} (4S_{3z} S_{4y}^3 + S_{3y} S_{4z}^3) + S_{3x}^2 (S_{3y} S_{4y}^3 + S_{3z} S_{4z}^3)))$$

$$A_4^{2,3,3} := \frac{1}{6\sqrt{10}} \left(-6S_{2a}S_{2b} \left(S_{3x}^2S_{3y}S_{4x}^2S_{4y} + S_{3y}S_{3z}^2S_{4y}S_{4z} - S_{3x}S_{4x} \left(S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2 \right) \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3x}^2S_{3y}S_{4x}^2S_{4y} + \right. \right. \\ \left. \left. S_{3y}S_{3z}^2S_{4y}S_{4z} + S_{3x}S_{4x} \left(S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2 \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3y}S_{3z}S_{4y}S_{4z} \left(4S_{3y}S_{4y} + S_{3z}S_{4z} \right) + \right. \right. \\ \left. \left. S_{3x}^2S_{4x}^2 \left(S_{3y}S_{4y} + 4S_{3z}S_{4z} \right) + S_{3x}S_{4x} \left(S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2 \right) \right) \right)$$

$$A_1^{2,4,2} := \frac{1}{6\sqrt{5}} \left(6S_{2a}S_{2b} \left(S_{3x}^4S_{4x}^2 - S_{3y}^4S_{4y}^2 \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3x}^4S_{4x}^2 + S_{3y}^4S_{4y}^2 \right) + \sqrt{3}S_{2b}^2 \left(S_{3x}^4S_{4x}^2 + S_{3y}^4S_{4y}^2 + 4S_{3z}^4S_{4z}^2 \right) \right)$$

$$A_2^{2,4,2} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(-S_{3x}S_{3y}^3S_{4x}S_{4y} - S_{3y}^3S_{3z}S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3x}S_{3y}^3S_{4x}S_{4y} + \right. \right. \\ \left. \left. S_{3y}^3S_{3z}S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3y}S_{3z} \left(S_{3y}^2 + 4S_{3z}^2 \right) S_{4y}S_{4z} + \right. \right. \\ \left. \left. S_{3x}^3S_{4x} \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) + S_{3x}S_{4x} \left(S_{3y}^3S_{4y} + 4S_{3z}^3S_{4z} \right) \right) \right)$$

$$A_1^{2,5,1} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(-S_{3x}S_{3y}^4S_{4x} - S_{3y}^4S_{3z}S_{4z} + S_{3x}^4 \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3x}S_{3y}^4S_{4x} + S_{3y}^4S_{3z}S_{4z} + \right. \right. \\ \left. \left. S_{3x}^4 \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) \right) + \sqrt{3}S_{2b}^2 \left(S_{3x} \left(S_{3y}^4 + 4S_{3z}^4 \right) S_{4x} + 4S_{3y}S_{3z}^4S_{4y} + S_{3y}^4S_{3z}S_{4z} + S_{3x}^4 \left(S_{3y}S_{4y} + S_{3z}S_{4z} \right) \right) \right)$$

$$A_1^{3,1,4} := \frac{1}{12\sqrt{14}} \left(9\sqrt{3}S_{2a}^2S_{2b}S_{4z} \left(-S_{3y}S_{4x}^3 + S_{3x}S_{4y}^3 + S_{3y}S_{4x}S_{4z}^2 - S_{3x}S_{4y}S_{4z}^2 \right) + \sqrt{3}S_{2b}^3 \left(-8S_{3z}S_{4x}^3S_{4y} + 8S_{3z}S_{4x}S_{4y}^3 - \right. \right. \\ \left. \left. S_{3y}S_{4x}^3S_{4z} + S_{3x}S_{4y}^3S_{4z} + S_{3y}S_{4x}S_{4z}^3 - S_{3x}S_{4y}S_{4z}^3 \right) + 9S_{2a}^3S_{4z} \left(S_{3x}S_{4y} \left(S_{4y}^2 - S_{4z}^2 \right) + \right. \right. \\ \left. \left. S_{3y} \left(S_{4x}^3 - S_{4x}S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2S_{4z} \left(S_{3x}S_{4y} \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y} \left(S_{4x}^3 - S_{4x}S_{4z}^2 \right) \right) \right)$$

$$A_1^{3,2,3} := \frac{1}{12\sqrt{14}} \left(9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}S_{3z}S_{4x}S_{4y}^2 - S_{3x} \left(S_{3z}S_{4x}^2S_{4y} + S_{3y} \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) \right) - 9S_{2a}^3 \left(S_{3y}S_{3z}S_{4x}S_{4y}^2 + \right. \right. \\ \left. \left. S_{3x} \left(S_{3z}S_{4x}^2S_{4y} - S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) \right) - 9S_{2a}S_{2b}^2 \left(S_{3y}S_{3z}S_{4x}S_{4y}^2 + S_{3x} \left(S_{3z}S_{4x}^2S_{4y} - S_{3y} \left(S_{4x}^2 + S_{4y}^2 \right) S_{4z} \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(S_{3y}S_{3z}S_{4x} \left(S_{4y}^2 + 8S_{4z}^2 \right) - S_{3x} \left(S_{3y} \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3z}S_{4y} \left(S_{4x}^2 + 8S_{4z}^2 \right) \right) \right) \right)$$

$$A_1^{3,3,2} := \frac{1}{12\sqrt{14}} \left(-9S_{2a}^3 \left(S_{3y}^2S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^2S_{4y}S_{4z} + S_{3x}^2S_{4x} \left(S_{3z}S_{4y} - S_{3y}S_{4z} \right) \right) - 9S_{2a}S_{2b}^2 \left(S_{3y}^2S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^2S_{4y}S_{4z} + \right. \right. \\ \left. \left. S_{3x}^2S_{4x} \left(S_{3z}S_{4y} - S_{3y}S_{4z} \right) \right) - 9\sqrt{3}S_{2a}^2S_{2b} \left(-S_{3y}^2S_{3z}S_{4x}S_{4y} + S_{3x}S_{3y}^2S_{4y}S_{4z} + S_{3x}^2S_{4x} \left(S_{3z}S_{4y} - S_{3y}S_{4z} \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(-S_{3x} \left(S_{3y}^2 + 8S_{3z}^2 \right) S_{4y}S_{4z} + S_{3y}S_{3z}S_{4x} \left(S_{3y}S_{4y} + 8S_{3z}S_{4z} \right) + S_{3x}^2 \left(-S_{3z}S_{4x}S_{4y} + S_{3y}S_{4x}S_{4z} \right) \right) \right)$$

$$A_1^{3,4,1} := \frac{1}{12\sqrt{14}} \left(-9S_{2a}^3 \left(S_{3x}^3S_{3z}S_{4y} - S_{3x}^3S_{3y}S_{4z} + S_{3y}^3 \left(S_{3z}S_{4x} - S_{3x}S_{4z} \right) \right) - 9S_{2a}S_{2b}^2 \left(S_{3x}^3S_{3z}S_{4y} - S_{3x}^3S_{3y}S_{4z} + \right. \right. \\ \left. \left. S_{3y}^3 \left(S_{3z}S_{4x} - S_{3x}S_{4z} \right) \right) + 9\sqrt{3}S_{2a}^2S_{2b} \left(-S_{3x}^3S_{3z}S_{4y} + S_{3x}^3S_{3y}S_{4z} + S_{3y}^3 \left(S_{3z}S_{4x} - S_{3x}S_{4z} \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(-S_{3z} \left(S_{3x}^3 + 8S_{3x}S_{3z}^2 \right) S_{4y} + S_{3y}^3 \left(S_{3z}S_{4x} - S_{3x}S_{4z} \right) + S_{3y} \left(8S_{3z}^3S_{4x} + S_{3x}^3S_{4z} \right) \right) \right)$$

Degree 9; Card=26

$$A_1^{0,4,5} := \frac{1}{\sqrt{6}} \left(S_{3x}^3S_{4x}^4 \left(S_{3z}S_{4y} + S_{3y}S_{4z} \right) + S_{3y}S_{3z}S_{4x} \left(S_{3y}^2S_{4y}^4 + S_{3z}^2S_{4z}^4 \right) + S_{3x} \left(S_{3y}^3S_{4y}^4S_{4z} + S_{3z}^3S_{4y}S_{4z}^4 \right) \right)$$

$$A_1^{0,5,4} := \frac{1}{\sqrt{6}} \left(S_{3x}^4S_{4x}^3 \left(S_{3z}S_{4y} + S_{3y}S_{4z} \right) + S_{3y}S_{3z}S_{4x} \left(S_{3y}^3S_{4y}^3 + S_{3z}^3S_{4z}^3 \right) + S_{3x} \left(S_{3y}^4S_{4y}^3S_{4z} + S_{3z}^4S_{4y}S_{4z}^3 \right) \right)$$

$$A_1^{1,2,6} := \frac{1}{6\sqrt{2}} \left(3S_{2a} \left(S_{3y}^2S_{4y}^4 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \sqrt{3}S_{2b} \left(2S_{3z}^2 \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z}^4 + S_{3x}^2S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) + \right. \right. \\ \left. \left. S_{3y}^2S_{4y}^4 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_1^{1,3,5} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^3 S_{4y}^3 (S_{4x}^2 - S_{4z}^2) + S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z}^3 (-S_{4x}^2 + S_{4y}^2) S_{4z}^3 + S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 S_{4y}^3 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,3,5} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^2 S_{4x} S_{4y}^4 - S_{3y}^2 S_{3z} S_{4y}^4 S_{4z} + S_{3x}^2 S_{4x}^4 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (S_{3x}^2 S_{4x}^4 (S_{3y} S_{4y} - S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y} S_{4y}^3 + 2S_{3z} S_{4z}^3) - S_{3x} S_{4x} (S_{3y}^2 S_{4y}^4 + 2S_{3z}^2 S_{4z}^4)) \right)$$

$$A_1^{1,4,4} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^4 S_{4y}^2 (S_{4x}^2 - S_{4z}^2) + S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2)) + \sqrt{3} S_{2b} (2S_{3z}^4 (-S_{4x}^2 + S_{4y}^2) S_{4z}^2 + S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2) + S_{3y}^4 S_{4y}^2 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_2^{1,4,4} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^3 S_{4x} S_{4y}^3 - S_{3y}^3 S_{3z} S_{4y}^3 S_{4z} + S_{3x}^3 S_{4x}^3 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (S_{3y}^3 S_{3z} S_{4y}^3 S_{4z} + 2S_{3y}^3 S_{3z} S_{4y} S_{4z}^3 + S_{3x}^3 S_{4x}^3 (S_{3y} S_{4y} - S_{3z} S_{4z}) - S_{3x} S_{4x} (S_{3y}^3 S_{4y}^3 + 2S_{3z}^3 S_{4z}^3)) \right)$$

$$A_1^{1,5,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^4 S_{4x} S_{4y}^2 - S_{3y}^4 S_{3z} S_{4y}^2 S_{4z} + S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \sqrt{3} S_{2b} (S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y}^3 S_{4y} + 2S_{3z}^3 S_{4z}) - S_{3x} S_{4x} (S_{3y}^4 S_{4y}^2 + 2S_{3z}^4 S_{4z}^2)) \right)$$

$$A_2^{1,5,3} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x} S_{3y}^4 S_{4x}^3 - S_{3y}^4 S_{3z} S_{4z}^3 + S_{3x}^4 (S_{3y} S_{4y}^3 - S_{3z} S_{4z}^3)) + \sqrt{3} S_{2b} (-S_{3x} (S_{3y}^4 + 2S_{3z}^4) S_{4x}^3 + 2S_{3y}^4 S_{3z} S_{4y}^3 + S_{3y}^4 S_{3z} S_{4z}^3 + S_{3x}^4 (S_{3y} S_{4y}^3 - S_{3z} S_{4z}^3)) \right)$$

$$A_1^{1,6,2} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x}^4 (S_{3y}^2 - S_{3z}^2) S_{4x}^2 + S_{3x}^2 S_{3y}^4 S_{4y}^2 - S_{3y}^4 S_{3z}^2 S_{4y}^2) + \sqrt{3} S_{2b} (S_{3x}^4 (S_{3y}^2 - S_{3z}^2) S_{4x}^2 + S_{3y}^4 S_{3z}^2 S_{4y}^2 + 2S_{3y}^2 S_{3z}^2 S_{4x}^2 - S_{3x}^2 (S_{3y}^4 S_{4y}^2 + 2S_{3z}^4 S_{4z}^2)) \right)$$

$$A_1^{2,2,5} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3y} S_{3z} S_{4x} S_{4y}^4 + S_{3x} (S_{3z} S_{4x} S_{4y} + S_{3y} (S_{4x}^4 - S_{4y}^4) S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3y} S_{3z} S_{4x} S_{4y}^4 + S_{3x} (S_{3z} S_{4x} S_{4y} + S_{3y} (S_{4x}^4 + S_{4y}^4) S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3y} S_{3z} S_{4x} (S_{4y}^4 + 4S_{4z}^4) + S_{3x} (S_{3y} (S_{4x}^4 + S_{4y}^4) S_{4z} + S_{3z} S_{4y} (S_{4x}^4 + 4S_{4z}^4))) \right)$$

$$A_1^{2,3,4} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3y}^2 S_{3z} S_{4x} S_{4y}^3 - S_{3x} S_{3y}^2 S_{4y}^3 S_{4z} + S_{3x}^2 S_{4x}^3 (S_{3z} S_{4y} + S_{3y} S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3y}^2 S_{3z} S_{4x} S_{4y}^3 + S_{3x} S_{3y}^2 S_{4y}^3 S_{4z} + S_{3x}^2 S_{4x}^3 (S_{3z} S_{4y} + S_{3y} S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3x}^2 S_{4x}^3 (S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y} S_{4y}^3 + 4S_{3z} S_{4z}^3) + S_{3x} (S_{3y}^2 S_{4y}^3 S_{4z} + 4S_{3z}^2 S_{4y} S_{4z}^3)) \right)$$

$$A_2^{2,3,4} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} S_{4z} (-S_{3x}^2 S_{3y} S_{4x}^3 + S_{3x} S_{3y}^2 S_{4y}^3 - S_{3y} S_{3z}^2 S_{4x} S_{4z}^2 + S_{3x} S_{3z}^2 S_{4y} S_{4z}^2) + 3\sqrt{3} S_{2a}^2 S_{4z} (S_{3x}^2 S_{3y} S_{4x}^3 + S_{3x} S_{3y}^2 S_{4y}^3 + S_{3y} S_{3z}^2 S_{4x} S_{4z}^2 + S_{3x} S_{3z}^2 S_{4y} S_{4z}^2) + \sqrt{3} S_{2b}^2 (S_{3x}^2 S_{4x}^3 (4S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3y} S_{3z} S_{4x} (4S_{3y} S_{4y}^3 + S_{3z} S_{4z}^3) + S_{3x} (S_{3y}^2 S_{4y}^3 S_{4z} + S_{3z}^2 S_{4y} S_{4z}^3)) \right)$$

$$A_1^{2,4,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3y}^3 S_{3z} S_{4x} S_{4y}^2 - S_{3x} S_{3y}^3 S_{4y}^2 S_{4z} + S_{3x}^3 S_{4x}^2 (S_{3z} S_{4y} + S_{3y} S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3y}^3 S_{3z} S_{4x} S_{4y}^2 + S_{3x} S_{3y}^3 S_{4y}^2 S_{4z} + S_{3x}^3 S_{4x}^2 (S_{3z} S_{4y} + S_{3y} S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3x}^3 S_{4x}^2 (S_{3z} S_{4y} + S_{3y} S_{4z}) + S_{3x} S_{4y} S_{4z} (S_{3y}^3 S_{4y} + 4S_{3z}^3 S_{4z}) + S_{3y} S_{3z} S_{4x} (S_{3y}^2 S_{4y}^2 + 4S_{3z}^2 S_{4z}^2)) \right)$$

$$A_2^{2,4,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b}S_{4z} \left(-S_{3x}S_{3y}^3S_{4x}^2 - S_{3y}^3S_{3z}S_{4x}S_{4z} + S_{3x}^3S_{4y}(S_{3y}S_{4y} + S_{3z}S_{4z}) \right) + 3\sqrt{3}S_{2a}^2S_{4z} \left(S_{3x}S_{3y}^3S_{4x}^2 + \right. \right. \\ \left. \left. S_{3y}^3S_{3z}S_{4x}S_{4z} + S_{3x}^3S_{4y}(S_{3y}S_{4y} + S_{3z}S_{4z}) \right) + \sqrt{3}S_{2b}^2 \left(S_{3x}S_{4x}^2 \left(4S_{3z}^3S_{4y} + S_{3y}^3S_{4z} \right) + \right. \\ \left. S_{3x}^3S_{4y}S_{4z}(S_{3y}S_{4y} + S_{3z}S_{4z}) + S_{3y}S_{3z}S_{4x} \left(4S_{3z}^2S_{4y}^2 + S_{3y}^2S_{4z}^2 \right) \right) \right)$$

$$A_1^{2,5,2} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} \left(-S_{3y}^4S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^4S_{4y}S_{4z} + S_{3x}^4S_{4x}(S_{3z}S_{4y} + S_{3y}S_{4z}) \right) + 3\sqrt{3}S_{2a}^2 \left(S_{3y}^4S_{3z}S_{4x}S_{4y} + \right. \right. \\ \left. \left. S_{3x}S_{3y}^4S_{4y}S_{4z} + S_{3x}^4S_{4x}(S_{3z}S_{4y} + S_{3y}S_{4z}) \right) + \sqrt{3}S_{2b}^2 \left(S_{3x} \left(S_{4y}^4 + 4S_{3z}^4 \right) S_{4y}S_{4z} + S_{3x}^4S_{4x}(S_{3z}S_{4y} + S_{3y}S_{4z}) + \right. \\ \left. S_{3y}S_{3z}S_{4x} \left(S_{3y}^3S_{4y} + 4S_{3z}^3S_{4z} \right) \right) \right)$$

$$A_1^{3,0,6} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{4x}^2S_{4y}^4 - S_{4y}^4S_{4z}^2 + S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{4x}^2S_{4y}^4 - S_{4y}^4S_{4z}^2 + S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(-S_{4x}^2S_{4y}^4 + S_{4y}^4S_{4z}^2 + S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \sqrt{3}S_{2b}^3 \left(S_{4x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) + \right. \\ \left. S_{4y}^2S_{4z}^2 \left(S_{4y}^2 + 8S_{4z}^2 \right) - S_{4x}^2 \left(S_{4y}^4 + 8S_{4z}^4 \right) \right) \right)$$

$$A_1^{3,1,5} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}S_{4y}^3 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}S_{4x}^3 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}S_{4y}^3 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}S_{4x}^3 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3x}S_{4x}^3 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}S_{4y}^3 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) + \sqrt{3}S_{2b}^3 \left(8S_{3z} \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z}^3 + \right. \\ \left. S_{3x}S_{4x}^3 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}S_{4y}^3 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_1^{3,2,4} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}^2S_{4y}^2 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2S_{4x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}^2S_{4y}^2 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^2S_{4x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3x}^2S_{4x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}^2S_{4y}^2 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) + \sqrt{3}S_{2b}^3 \left(8S_{3z}^3 \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z}^2 + \right. \\ \left. S_{3x}^2S_{4x}^2 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}^2S_{4y}^2 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_2^{3,2,4} := \frac{1}{12\sqrt{14}} \left(9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}S_{3z}S_{4y}^3S_{4z} + S_{3x} \left(S_{3y}S_{4x}S_{4y} \left(S_{4x}^2 - S_{4y}^2 \right) - S_{3z}S_{4x}^3S_{4z} \right) \right) + 9S_{2a}^3 \left(-S_{3y}S_{3z}S_{4y}^3S_{4z} + \right. \\ \left. S_{3x} \left(S_{3y}S_{4x}S_{4y} \left(S_{4x}^2 + S_{4y}^2 \right) - S_{3z}S_{4x}^3S_{4z} \right) \right) + 9S_{2a}S_{2b}^2 \left(-S_{3y}S_{3z}S_{4y}^3S_{4z} + S_{3x} \left(S_{3y}S_{4x}S_{4y} \left(S_{4x}^2 + S_{4y}^2 \right) - \right. \right. \\ \left. \left. S_{3z}S_{4x}^3S_{4z} \right) \right) + \sqrt{3}S_{2b}^3 \left(S_{3y}S_{3z}S_{4y}S_{4z} \left(S_{4y}^2 + 8S_{4z}^2 \right) + S_{3x}S_{4x} \left(S_{3y}S_{4y} \left(S_{4x}^2 - S_{4y}^2 \right) - S_{3z}S_{4z} \left(S_{4x}^2 + 8S_{4z}^2 \right) \right) \right) \right)$$

$$A_1^{3,3,3} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}^3S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^3S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}^3S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^3S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(8S_{3z}^3 \left(-S_{4x}^2 + S_{4y}^2 \right) S_{4z} + S_{3x}^3S_{4x} \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}^3S_{4y} \left(-S_{4x}^2 + S_{4z}^2 \right) \right) - \right. \\ \left. 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}^3S_{4y} \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^3S_{4x} \left(-S_{4y}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_2^{3,3,3} := \frac{1}{12\sqrt{14}} \left(9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3x}S_{4x} - S_{3y}S_{4y} \right) \left(-S_{3y}S_{3z}S_{4y}S_{4z} + S_{3x}S_{4x} \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9S_{2a}^3 \left(S_{3x}S_{3y}^2S_{4x}S_{4y}^2 - \right. \\ \left. S_{3y}^2S_{3z}S_{4y}^2S_{4z} + S_{3x}^2S_{4x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3x}S_{3y}^2S_{4x}S_{4y}^2 - S_{3y}^2S_{3z}S_{4y}^2S_{4z} + S_{3x}^2S_{4x}^2 \left(S_{3y}S_{4y} - \right. \right. \\ \left. \left. S_{3z}S_{4z} \right) \right) + \sqrt{3}S_{2b}^3 \left(S_{3x}^2S_{4x}^2 \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) + S_{3y}S_{3z}S_{4y}S_{4z} \left(S_{3y}S_{4y} + 8S_{3z}S_{4z} \right) - S_{3x}S_{4x} \left(S_{3y}^2S_{4y}^2 + 8S_{3z}^2S_{4z}^2 \right) \right) \right)$$

$$A_1^{3,4,2} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3y}^4 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3y}^4 \left(S_{4x}^2 - S_{4z}^2 \right) + S_{3x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) \right) + \right. \\ \left. \sqrt{3}S_{2b}^3 \left(-8S_{3z}^4 \left(S_{4x}^2 - S_{4y}^2 \right) + S_{3x}^4 \left(S_{4y}^2 - S_{4z}^2 \right) + S_{3y}^4 \left(-S_{4x}^2 + S_{4z}^2 \right) \right) - 9\sqrt{3}S_{2a}^2S_{2b} \left(S_{3y}^4 \left(S_{4x}^2 - S_{4z}^2 \right) + \right. \\ \left. S_{3x}^4 \left(-S_{4y}^2 + S_{4z}^2 \right) \right) \right)$$

$$A_2^{3,4,2} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 \left(S_{3x}S_{3y}^3S_{4x}S_{4y} - S_{3y}^3S_{3z}S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9S_{2a}S_{2b}^2 \left(S_{3x}S_{3y}^3S_{4x}S_{4y} - \right. \\ \left. S_{3y}^3S_{3z}S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) \right) + 9\sqrt{3}S_{2a}^2S_{2b} \left(-S_{3x}S_{3y}^3S_{4x}S_{4y} + S_{3y}^3S_{3z}S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} - \right. \right. \\ \left. \left. S_{3z}S_{4z} \right) \right) + \sqrt{3}S_{2b}^3 \left(S_{3y}S_{3z} \left(S_{3y}^2 + 8S_{3z}^2 \right) S_{4y}S_{4z} + S_{3x}^3S_{4x} \left(S_{3y}S_{4y} - S_{3z}S_{4z} \right) - S_{3x}S_{4x} \left(S_{3y}^3S_{4y} + 8S_{3z}^3S_{4z} \right) \right) \right)$$

$$\begin{aligned}
A_1^{3,5,1} &:= \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 (S_{3x}S_{3y}^4S_{4x} - S_{3y}^4S_{3z}S_{4z} + S_{3x}^4(S_{3y}S_{4y} - S_{3z}S_{4z})) + 9S_{2a}S_{2b}^2 (S_{3x}S_{3y}^4S_{4x} - S_{3y}^4S_{3z}S_{4z} + \right. \\
&\quad \left. S_{3x}^4(S_{3y}S_{4y} - S_{3z}S_{4z})) + 9\sqrt{3}S_{2a}^2S_{2b} (-S_{3x}S_{3y}^4S_{4x} + S_{3y}^4S_{3z}S_{4z} + S_{3x}^4(S_{3y}S_{4y} - S_{3z}S_{4z})) + \right. \\
&\quad \left. \sqrt{3}S_{2b}^3 (-S_{3x} (S_{3y}^4 + 8S_{3z}^4) S_{4x} + 8S_{3y}S_{3z}^4S_{4y} + S_{3y}^4S_{3z}S_{4z} + S_{3x}^4(S_{3y}S_{4y} - S_{3z}S_{4z})) \right) \\
A_1^{3,6,0} &:= \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 (S_{3x}^2S_{3y}^4 - S_{3y}^4S_{3z}^2 + S_{3x}^4(S_{3y}^2 - S_{3z}^2)) + 9S_{2a}S_{2b}^2 (S_{3x}^2S_{3y}^4 - S_{3y}^4S_{3z}^2 + S_{3x}^4(S_{3y}^2 - S_{3z}^2)) + \right. \\
&\quad \left. 9\sqrt{3}S_{2a}^2S_{2b} (-S_{3x}^2S_{3y}^4 + S_{3y}^4S_{3z}^2 + S_{3x}^4(S_{3y}^2 - S_{3z}^2)) + \sqrt{3}S_{2b}^3 (S_{3x}^4(S_{3y}^2 - S_{3z}^2) + S_{3y}^2S_{3z}^2(S_{3y}^2 + 8S_{3z}^2) - \right. \\
&\quad \left. S_{3x}^2(S_{3y}^4 + 8S_{3z}^4)) \right)
\end{aligned}$$

Degree 10; Card=15

$$\begin{aligned}
A_1^{0,5,5} &:= \frac{1}{\sqrt{6}} (S_{3y}^4S_{3z}S_{4y}S_{4z} + S_{3y}S_{3z}^4S_{4y}S_{4z} + S_{3x}^4S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z}) + S_{3x}S_{4x}(S_{3y}^4S_{4y} + S_{3z}^4S_{4z})) \\
A_1^{1,4,5} &:= \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y}^3S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^3S_{4y}S_{4z} + S_{3x}^3S_{4x}(S_{3z}S_{4y} - S_{3y}S_{4z})) + \sqrt{3}S_{2b} (S_{3x}^3S_{4x}(-S_{3z}S_{4y} + S_{3y}S_{4z}) + \\
&\quad S_{3y}S_{3z}S_{4x} (S_{3y}^2S_{4y}^4 + 2S_{3z}^2S_{4z}^4) - S_{3x} (S_{3y}^3S_{4y}S_{4z} + 2S_{3z}^3S_{4y}S_{4z}))) \\
A_1^{1,5,4} &:= \frac{1}{6\sqrt{2}} (-3S_{2a} (S_{3y}^4S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^4S_{4y}S_{4z} + S_{3x}^4S_{4x}(S_{3z}S_{4y} - S_{3y}S_{4z})) + \sqrt{3}S_{2b} (S_{3x}^4S_{4x}(-S_{3z}S_{4y} + S_{3y}S_{4z}) + \\
&\quad S_{3y}S_{3z}S_{4x} (S_{3y}^3S_{4y}^3 + 2S_{3z}^3S_{4z}^3) - S_{3x} (S_{3y}^4S_{4y}S_{4z} + 2S_{3z}^4S_{4y}S_{4z}))) \\
A_1^{2,2,6} &:= \frac{1}{6\sqrt{10}} (6S_{2a}S_{2b} (S_{3y}^2S_{4x}^4S_{4y}^2 - S_{3x}^2S_{4x}^2S_{4y}^4 + S_{3z}^2 (S_{4x}^4 - S_{4y}^4) S_{4z}^2) + 3\sqrt{3}S_{2a}^2 (S_{3y}^2S_{4x}^4S_{4y}^2 + \\
&\quad S_{3x}^2S_{4x}^2S_{4y}^4 + S_{3z}^2 (S_{4x}^4 + S_{4y}^4) S_{4z}^2) + \sqrt{3}S_{2b}^2 (S_{3z}^2 (S_{4x}^4 + S_{4y}^4) S_{4z}^2 + S_{3y}^2S_{4y}^2 (S_{4x}^4 + 4S_{4z}^4) + S_{3x}^2S_{4x}^2 (S_{4y}^4 + 4S_{4z}^4))) \\
A_1^{2,3,5} &:= \frac{1}{6\sqrt{10}} (6S_{2a}S_{2b} (-S_{3x}S_{3y}^2S_{4x}S_{4y}^4 - S_{3y}^2S_{3z}S_{4y}S_{4z} + S_{3x}^2S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + 3\sqrt{3}S_{2a}^2 (S_{3x}S_{3y}^2S_{4x}S_{4y}^4 + \\
&\quad S_{3y}^2S_{3z}S_{4y}S_{4z} + S_{3x}^2S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + \sqrt{3}S_{2b}^2 (S_{3x}^2S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z}) + \\
&\quad S_{3y}S_{3z}S_{4y}S_{4z} (S_{3y}S_{4y}^3 + 4S_{3z}S_{4z}^3) + S_{3x}S_{4x} (S_{3y}^2S_{4y}^4 + 4S_{3z}^2S_{4z}^4))) \\
A_2^{2,3,5} &:= \frac{1}{6\sqrt{10}} (-6S_{2a}S_{2b} (S_{3x}^2S_{3y}S_{4x}^2S_{4y}^3 + S_{3y}S_{3z}^2S_{4y}^3S_{4z}^2 - S_{3x}S_{4x}^3 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2)) + 3\sqrt{3}S_{2a}^2 (S_{3x}^2S_{3y}S_{4x}^2S_{4y}^3 + \\
&\quad S_{3y}S_{3z}^2S_{4y}^3S_{4z}^2 + S_{3x}S_{4x}^3 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2)) + \sqrt{3}S_{2b}^2 (S_{3y}S_{3z}S_{4y}^2S_{4z}^2 (S_{3z}S_{4y} + 4S_{3y}S_{4z}) + \\
&\quad S_{3x}S_{4x}^3 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2) + S_{3x}^2S_{4x} (S_{3y}S_{4y}^3 + 4S_{3z}S_{4z}^3))) \\
A_1^{2,4,4} &:= \frac{1}{6\sqrt{5}} (6S_{2a}S_{2b} (S_{3x}^4S_{4x} - S_{3y}^4S_{4y})) + 3\sqrt{3}S_{2a}^2 (S_{3x}^4S_{4x} + S_{3y}^4S_{4y}) + \sqrt{3}S_{2b}^2 (S_{3x}^4S_{4x} + S_{3y}^4S_{4y} + 4S_{3z}^4S_{4z}) \\
A_2^{2,4,4} &:= \frac{1}{6\sqrt{10}} (6S_{2a}S_{2b} (-S_{3x}S_{3y}^3S_{4x}S_{4y}^3 - S_{3y}^3S_{3z}S_{4y}^3S_{4z} + S_{3x}^3S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + 3\sqrt{3}S_{2a}^2 (S_{3x}S_{3y}^3S_{4x}S_{4y}^3 + \\
&\quad S_{3y}^3S_{3z}S_{4y}^3S_{4z} + S_{3x}^3S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + \sqrt{3}S_{2b}^2 (S_{3y}^3S_{3z}S_{4y}^3S_{4z} + 4S_{3y}S_{3z}S_{4y}S_{4z}^3 + \\
&\quad S_{3x}^3S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z}) + S_{3x}S_{4x} (S_{3y}^3S_{4y}^3 + 4S_{3z}^3S_{4z}^3))) \\
A_1^{2,5,3} &:= \frac{1}{6\sqrt{10}} (6S_{2a}S_{2b} (-S_{3x}S_{3y}^4S_{4x}S_{4y}^2 - S_{3y}^4S_{3z}S_{4y}^2S_{4z} + S_{3x}^4S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + 3\sqrt{3}S_{2a}^2 (S_{3x}S_{3y}^4S_{4x}S_{4y}^2 + \\
&\quad S_{3y}^4S_{3z}S_{4y}^2S_{4z} + S_{3x}^4S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z})) + \sqrt{3}S_{2b}^2 (S_{3x}^4S_{4x}(S_{3y}S_{4y} + S_{3z}S_{4z}) + \\
&\quad S_{3y}S_{3z}S_{4y}S_{4z} (S_{3y}^3S_{4y} + 4S_{3z}^3S_{4z}) + S_{3x}S_{4x} (S_{3y}^4S_{4y}^2 + 4S_{3z}^4S_{4z}^2)))
\end{aligned}$$

$$A_2^{2,5,3} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} (-S_{3x}S_{3y}^4S_{4x}^3 - S_{3y}^4S_{3z}S_{4z}^3 + S_{3x}^4 (S_{3y}S_{4y}^3 + S_{3z}S_{4z}^3)) + 3\sqrt{3}S_{2a}^2 (S_{3x}S_{3y}^4S_{4x}^3 + S_{3y}^4S_{3z}S_{4z}^3 + S_{3x}^4 (S_{3y}S_{4y}^3 + S_{3z}S_{4z}^3)) + \sqrt{3}S_{2b}^2 (S_{3x} (S_{3y}^4 + 4S_{3z}^4) S_{4x}^3 + 4S_{3y}S_{3z}^4S_{4y}^3 + S_{3y}^4S_{3z}S_{4z}^3 + S_{3x}^4 (S_{3y}S_{4y}^3 + S_{3z}S_{4z}^3)) \right)$$

$$A_1^{2,6,2} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} (-S_{3x}^2S_{3y}^4S_{4x}^2 - S_{3y}^4S_{3z}^2S_{4z}^2 + S_{3x}^4 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2)) + 3\sqrt{3}S_{2a}^2 (S_{3x}^2S_{3y}^4S_{4x}^2 + S_{3y}^4S_{3z}^2S_{4z}^2 + S_{3x}^4 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2)) + \sqrt{3}S_{2b}^2 (S_{3x}^2 (S_{3y}^4 + 4S_{3z}^4) S_{4x}^2 + 4S_{3y}^2S_{3z}^4S_{4y}^2 + S_{3y}^4S_{3z}^2S_{4z}^2 + S_{3x}^4 (S_{3y}^2S_{4y}^2 + S_{3z}^2S_{4z}^2)) \right)$$

$$A_1^{3,2,5} := \frac{1}{12\sqrt{14}} \left(9\sqrt{3}S_{2a}^2S_{2b} (S_{3y}S_{3z}S_{4x}S_{4y}^4 - S_{3x} (S_{3z}S_{4x}^4S_{4y} + S_{3y} (-S_{4x}^4 + S_{4y}^4) S_{4z})) - 9S_{2a}^3 (S_{3y}S_{3z}S_{4x}S_{4y}^4 + S_{3x} (S_{3z}S_{4x}^4S_{4y} - S_{3y} (S_{4x}^4 + S_{4y}^4) S_{4z})) + \sqrt{3}S_{2b}^3 (S_{3y}S_{3z}S_{4x} (S_{4y}^4 + 8S_{4z}^4) - S_{3x} (S_{3y} (-S_{4x}^4 + S_{4y}^4) S_{4z} + S_{3z}S_{4y} (S_{4x}^4 + 8S_{4z}^4))) \right)$$

$$A_1^{3,3,4} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3S_{4z} (S_{3x}^3S_{4y} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 (S_{4x}^3 - S_{4x}S_{4z}^2)) + 9S_{2a}S_{2b}^2S_{4z} (S_{3x}^3S_{4y} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 (S_{4x}^3 - S_{4x}S_{4z}^2)) + \sqrt{3}S_{2b}^3 (S_{3z}^3 (-8S_{4x}^3S_{4y} + 8S_{4x}S_{4y}^3) + S_{3x}^3S_{4y}S_{4z} (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 (-S_{4x}^3S_{4z} + S_{4x}S_{4z}^3)) \right)$$

$$A_1^{3,4,3} := \frac{1}{12\sqrt{14}} \left(-9S_{2a}^3 (S_{3y}^3S_{3z}S_{4x}S_{4y}^2 - S_{3x}S_{3y}^3S_{4y}^2S_{4z} + S_{3x}^3S_{4x}^2 (S_{3z}S_{4y} - S_{3y}S_{4z})) - 9S_{2a}S_{2b}^2 (S_{3y}^3S_{3z}S_{4x}S_{4y}^2 - S_{3x}S_{3y}^3S_{4y}^2S_{4z} + S_{3x}^3S_{4x}^2 (S_{3z}S_{4y} - S_{3y}S_{4z})) + \sqrt{3}S_{2b}^3 (S_{3x}^3S_{4x}^2 (-S_{3z}S_{4y} + S_{3y}S_{4z}) - 9\sqrt{3}S_{2a}^2S_{2b} (-S_{3y}^3S_{3z}S_{4x}S_{4y}^2 + S_{3x}S_{3y}^3S_{4y}^2S_{4z} + S_{3x}^3S_{4x}^2 (S_{3z}S_{4y} - S_{3y}S_{4z})) + \sqrt{3}S_{2b}^3 (S_{3x}^3S_{4x}^2 (-S_{3z}S_{4y} + S_{3y}S_{4z}) - S_{3x}S_{4y}S_{4z} (S_{3y}^3S_{4y} + 8S_{3z}^3S_{4z}) + S_{3y}S_{3z}S_{4x} (S_{3y}^2S_{4y}^2 + 8S_{3z}^2S_{4z}^2)) \right)$$

$$A_1^{3,5,2} := \frac{1}{12\sqrt{14}} \left(-9S_{2a}^3 (S_{3y}^4S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^4S_{4y}S_{4z} + S_{3x}^4S_{4x} (S_{3z}S_{4y} - S_{3y}S_{4z})) - 9S_{2a}S_{2b}^2 (S_{3y}^4S_{3z}S_{4x}S_{4y} - S_{3x}S_{3y}^4S_{4y}S_{4z} + S_{3x}^4S_{4x} (S_{3z}S_{4y} - S_{3y}S_{4z})) + \sqrt{3}S_{2b}^3 (-S_{3x} (S_{3y}^4 + 8S_{3z}^4) S_{4y}S_{4z} + S_{3y}S_{3z}S_{4x} (S_{3y}^3S_{4y} + 8S_{3z}^3S_{4z}) + S_{3x}^4 (-S_{3z}S_{4x}S_{4y} + S_{3y}S_{4x}S_{4z})) \right)$$

Degree 11; Card=8

$$A_1^{1,4,6} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3y}^4S_{4y} (S_{4x}^2 - S_{4z}^2) + S_{3x}^4S_{4x} (S_{4y}^2 - S_{4z}^2)) + \sqrt{3}S_{2b} (2S_{3z}^4 (-S_{4x}^2 + S_{4y}^2) S_{4z} + S_{3x}^4S_{4x} (S_{4y}^2 - S_{4z}^2) + S_{3y}^4S_{4y} (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_1^{1,5,5} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x}S_{3y}^4S_{4x}S_{4y} - S_{3y}^4S_{3z}S_{4y}S_{4z} + S_{3x}^4S_{4x} (S_{3y}S_{4y} - S_{3z}S_{4z})) + \sqrt{3}S_{2b} (S_{3y}^4S_{3z}S_{4y}S_{4z} + 2S_{3y}^4S_{3z}S_{4y}S_{4z} + S_{3x}^4S_{4x} (S_{3y}S_{4y} - S_{3z}S_{4z}) - S_{3x}S_{4x} (S_{3y}^4S_{4y} + 2S_{3z}^4S_{4z})) \right)$$

$$A_1^{1,6,4} := \frac{1}{6\sqrt{2}} \left(3S_{2a} (S_{3x}^4 (S_{3y}^2 - S_{3z}^2) S_{4x} + S_{3x}^2S_{3y}^4S_{4y} - S_{3y}^4S_{3z}^2S_{4y}^4) + \sqrt{3}S_{2b} (S_{3x}^4 (S_{3y}^2 - S_{3z}^2) S_{4x} + S_{3y}^4S_{3z}^2S_{4y}^4 + 2S_{3y}^2S_{3z}^4S_{4z} - S_{3x}^2 (S_{3y}^4S_{4y} + 2S_{3z}^4S_{4z})) \right)$$

$$A_1^{2,4,5} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} (-S_{3y}^3S_{3z}S_{4x}S_{4y}^4 - S_{3x}S_{3y}^3S_{4y}^4S_{4z} + S_{3x}^3S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z})) + 3\sqrt{3}S_{2a}^2 (S_{3y}^3S_{3z}S_{4x}S_{4y}^4 + S_{3x}S_{3y}^3S_{4y}^4S_{4z} + S_{3x}^3S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z})) + \sqrt{3}S_{2b}^2 (S_{3x}^3S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z}) + S_{3y}S_{3z}S_{4x} (S_{3y}^2S_{4y}^4 + 4S_{3z}^2S_{4z}^4) + S_{3x} (S_{3y}^3S_{4y}^4S_{4z} + 4S_{3z}^3S_{4y}^4S_{4z})) \right)$$

$$A_1^{2,5,4} := \frac{1}{6\sqrt{10}} \left(6S_{2a}S_{2b} (-S_{3y}^4S_{3z}S_{4x}S_{4y}^3 - S_{3x}S_{3y}^4S_{4y}^3S_{4z} + S_{3x}^4S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z})) + 3\sqrt{3}S_{2a}^2 (S_{3y}^4S_{3z}S_{4x}S_{4y}^3 + S_{3x}S_{3y}^4S_{4y}^3S_{4z} + S_{3x}^4S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z})) + \sqrt{3}S_{2b}^2 (S_{3x}^4S_{4x} (S_{3z}S_{4y} + S_{3y}S_{4z}) + S_{3y}S_{3z}S_{4x} (S_{3y}^3S_{4y}^3 + 4S_{3z}^3S_{4z}^3) + S_{3x} (S_{3y}^4S_{4y}^3S_{4z} + 4S_{3z}^4S_{4y}^3S_{4z})) \right)$$

$$A_1^{3,3,5} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 (S_{3y}^3 S_{4y}^3 (S_{4x}^2 - S_{4z}^2) + S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2)) + 9S_{2a} S_{2b}^2 (S_{3y}^3 S_{4y}^3 (S_{4x}^2 - S_{4z}^2) + S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2)) + \right. \\ \left. 9\sqrt{3} S_{2a}^2 S_{2b} (S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 S_{4y}^3 (-S_{4x}^2 + S_{4z}^2)) + \sqrt{3} S_{2b}^3 (8S_{3z}^3 (-S_{4x}^2 + S_{4y}^2) S_{4z}^3 + \right. \\ \left. S_{3x}^3 S_{4x}^3 (S_{4y}^2 - S_{4z}^2) + S_{3y}^3 S_{4y}^3 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_1^{3,4,4} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 (S_{3y}^4 S_{4y}^2 (S_{4x}^2 - S_{4z}^2) + S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2)) + 9S_{2a} S_{2b}^2 (S_{3y}^4 S_{4y}^2 (S_{4x}^2 - S_{4z}^2) + S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2)) + \right. \\ \left. 9\sqrt{3} S_{2a}^2 S_{2b} (S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2) + S_{3y}^4 S_{4y}^2 (-S_{4x}^2 + S_{4z}^2)) + \sqrt{3} S_{2b}^3 (8S_{3z}^4 (-S_{4x}^2 + S_{4y}^2) S_{4z}^2 + \right. \\ \left. S_{3x}^4 S_{4x}^2 (S_{4y}^2 - S_{4z}^2) + S_{3y}^4 S_{4y}^2 (-S_{4x}^2 + S_{4z}^2)) \right)$$

$$A_1^{3,5,3} := \frac{1}{12\sqrt{14}} \left(9S_{2a}^3 (S_{3x} S_{3y}^4 S_{4x} S_{4y}^2 - S_{3y}^4 S_{3z} S_{4y}^2 S_{4z} + S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + 9S_{2a} S_{2b}^2 (S_{3x} S_{3y}^4 S_{4x} S_{4y}^2 - S_{3y}^4 S_{3z} S_{4y}^2 S_{4z} + \right. \\ \left. S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + 9\sqrt{3} S_{2a}^2 S_{2b} (-S_{3x} S_{3y}^4 S_{4x} S_{4y}^2 + S_{3y}^4 S_{3z} S_{4y}^2 S_{4z} + S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z})) + \right. \\ \left. \sqrt{3} S_{2b}^3 (S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} - S_{3z} S_{4z}) + S_{3y} S_{3z} S_{4y} S_{4z} (S_{3y}^4 S_{4y} + 8S_{3z}^4 S_{4z}) - S_{3x} S_{4x} (S_{3y}^4 S_{4y}^2 + 8S_{3z}^4 S_{4z}^2)) \right)$$

Degree 12; Card=4

$$A_1^{0,6,6} := \frac{1}{\sqrt{6}} \left(S_{3y}^4 S_{3z}^2 S_{4y}^2 S_{4z}^2 + S_{3y}^2 S_{3z}^4 S_{4y}^2 S_{4z}^4 + S_{3x}^4 S_{4x}^2 (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2) + S_{3x}^2 S_{4x}^2 (S_{3y}^4 S_{4y}^2 + S_{3z}^4 S_{4z}^2) \right)$$

$$A_1^{2,4,6} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3y}^2 S_{3z}^2 S_{4y}^2 S_{4z}^2 + S_{3x}^2 (S_{3y}^2 S_{4x}^2 S_{4y}^2 (S_{4x}^2 - S_{4y}^2) + S_{3z}^2 S_{4x}^2 S_{4z}^2)) + 3\sqrt{3} S_{2a}^2 (S_{3y}^2 S_{3z}^2 S_{4y}^2 S_{4z}^2 + \right. \\ \left. S_{3x}^2 (S_{3y}^2 S_{4x}^2 S_{4y}^2 (S_{4x}^2 + S_{4y}^2) + S_{3z}^2 S_{4x}^2 S_{4z}^2)) + \sqrt{3} S_{2b}^2 (S_{3y}^2 S_{3z}^2 S_{4y}^2 S_{4z}^2 (S_{4y}^2 + 4S_{4z}^2) + \right. \\ \left. S_{3x}^2 S_{4x}^2 (S_{3y}^2 S_{4y}^2 (S_{4x}^2 + S_{4y}^2) + S_{3z}^2 S_{4z}^2 (S_{4x}^2 + 4S_{4z}^2))) \right)$$

$$A_1^{2,5,5} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3x} S_{3y}^4 S_{4x} S_{4y}^4 - S_{3y}^4 S_{3z} S_{4y}^4 S_{4z} + S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z})) + 3\sqrt{3} S_{2a}^2 (S_{3x} S_{3y}^4 S_{4x} S_{4y}^4 + \right. \\ \left. S_{3y}^4 S_{3z} S_{4y}^4 S_{4z} + S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z})) + \sqrt{3} S_{2b}^2 (S_{3y}^4 S_{3z} S_{4y}^4 S_{4z} + 4S_{3y} S_{3z} S_{4y} S_{4z} + \right. \\ \left. S_{3x}^4 S_{4x}^2 (S_{3y} S_{4y} + S_{3z} S_{4z}) + S_{3x} S_{4x} (S_{3y}^4 S_{4y}^2 + 4S_{3z}^4 S_{4z}^2)) \right)$$

$$A_1^{2,6,4} := \frac{1}{6\sqrt{10}} \left(6S_{2a} S_{2b} (-S_{3x}^2 S_{3y}^4 S_{4x}^2 S_{4y}^2 - S_{3y}^4 S_{3z}^2 S_{4y}^2 S_{4z}^2 + S_{3x}^4 S_{4x}^2 (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2)) + 3\sqrt{3} S_{2a}^2 (S_{3x}^2 S_{3y}^4 S_{4x}^2 S_{4y}^2 + \right. \\ \left. S_{3y}^4 S_{3z}^2 S_{4y}^2 S_{4z}^2 + S_{3x}^4 S_{4x}^2 (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2)) + \sqrt{3} S_{2b}^2 (S_{3y}^4 S_{3z}^2 (S_{3y}^2 + 4S_{3z}^2) S_{4y}^2 S_{4z}^2 + \right. \\ \left. S_{3x}^4 S_{4x}^2 (S_{3y}^2 S_{4y}^2 + S_{3z}^2 S_{4z}^2) + S_{3x}^2 S_{4x}^2 (S_{3y}^4 S_{4y}^2 + 4S_{3z}^4 S_{4z}^2)) \right)$$