

$$\sum \prod (2x_e + 1) (\sum (-1)^u \Delta u)$$

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$$\bar{n}_{112}^1 = (2x_1 + 1)(2x_2 + 1)z_{112} + (2x_1 + 1)(-\Delta_2 + \Delta_1)x_2 - \Delta x_{112} \Delta_1$$

\uparrow
 $(x_1 - x_2)$

We have: $x_1 = x_2 + \Delta x_{112}$

$$\Leftrightarrow \Delta x_{112} = x_1 - x_2$$

$$\Rightarrow \bar{n}_{112}^1 = (2x_1 + 1)(2x_2 + 1)z_{112} + (2x_1 + 1)(-\Delta_2)x_2 + (2x_1 + 1)\Delta_1 x_2$$

$$\quad \quad \quad - x_1 \Delta_1 + x_2 \Delta_1$$

$$= (2x_1 + 1)(2x_2 + 1)z_{112} + \cancel{(2x_1 + 1)(-\Delta_2)x_2} - x_1 \Delta_1$$

$$+ (2x_1 + 1)\Delta_1 x_2 + x_2 \Delta_1$$

$$= (2x_1 + 1)(2x_2 + 1)z_{112} - 2x_1 x_2 \Delta_2 - \Delta_2 x_2$$

$$+ 2x_1 x_2 \Delta_1 + \Delta_1 x_2 - x_1 \Delta_1 + x_2 \Delta_1$$

$$= (2x_1 + 1)(2x_2 + 1)z_{112} - \Delta_2 (2x_1 x_2 + x_2) + \Delta_1 (2x_1 x_2 + x_2 - x_1 + x_2)$$

$$= (2x_1 + 1)(2x_2 + 1)z_{112} - \Delta_2 (2x_1 + 1)x_2 + \Delta_1 ((2x_2 + 1)x_1 - 2x_1 + 2x_2)$$

$$= (2x_1 + 1)(2x_2 + 1)z_{112} - \Delta_2 (2x_1 + 1)x_2 + \Delta_1 (2x_2 + 1)x_1$$

$$+ 2(-x_1 + x_2) \cdot \Delta_1$$

$$= -2(x_1 - x_2) = -2 \cdot \Delta x_{112}$$

$$\bar{n}_{112}^1 = (2x_1 + 1)(2x_2 + 1)z_{112} + (-\Delta_2 (2x_1 + 1)x_2 + \Delta_1 (2x_2 + 1)x_1)$$

$$- 2(\underbrace{x_1 - x_2}_{\Delta x_{112}}) \cdot \Delta_1 = -\Delta_{12}$$