VI

$\boxed{\bar n_1 = (2x_1+1)y_1 - \Delta_1}$

→ We only need odd $\bar n$. $, m \in \mathbb{N}$ (eq. 14)

⇒ ~~[crossed out]~~ $\boxed{2m+1 = \bar n_1 = (2x_1+1)y_1 - \Delta_1}$ with $\Delta_1 \in \{1,\dots,2x_1\}$

We have different possibilities to rewrite the right side, to get the necessary numbers. We will choose the following:

$$2m+1 = \bar n_1 = (2x_1+1)\underbrace{(2u_1+1)}_{=:y_1,\ u_1 \in \mathbb{N}} - \Delta_1$$

→ we only have odd y_1 now.

⇒ Δ_1 has to be 2ℓ, $\ell \in \mathbb{N}$

⇒ So, be $\Delta_1^0 \in \{1,\dots,x_i\}$ but now (with only odd numbers) we have a doubbled intervall, so we have in real $\Delta_1^0 \in \{1,\dots,2x_1\}$ again

It follows:

$$\boxed{2m+1 = \bar n_1^0 = (2x_1+1)\underbrace{(2u_1+1)}_{=:y_1'} - 2\Delta_1^{0}}$$, with $\boxed{\Delta_1^0 \in \{1,\dots,2x_1\}}$ (eq. 15)

$$\Rightarrow \bar n_1^0 = (2x_1+1)(2u_1+1) - 2\Delta_1^0 \cdot \Delta x_{1,2}$$

$$\bar n_2^0 = (2x_2+1)\underbrace{(2u_2+1)}_{=:y_2'} - 2\Delta_2^0 \cdot \Delta x_{1,2}$$

$$\Rightarrow y_1' = (2u_1+1) = x_2 \cdot (-\Delta_2+\Delta_1) + (2x_2+1) z_{1,2}$$

$$u_1 = \frac{1}{2}\left(x_2(-\Delta_2+\Delta_1) + (2x_2+1) z_{1,2} - 1 \right)$$

$$(2x_1+1)(2u_1+1) - 2\Delta_1^0 \cdot \Delta x_{1,2} = (2x_2+1)(2u_2+1) - 2\Delta_2^0 \cdot \Delta x_{1,2}$$

$\underline{x_2 = x_1 + \Delta x_{1,2}}$

$$0 = (\overbrace{2(x_1+\Delta x_{1,2})+1}^{(2x_1+1)+2\Delta x_{1,2}})(2u_2+1) - (2x_1+1)(2u_1+1) - 2\Delta_2^0 \cdot \Delta x_{1,2} + 2\Delta_1^0 \cdot \Delta x_{1,2}$$

$$\cdot\tfrac{1}{2} \Big/ = (2x_1+1)\underbrace{(2u_2+1-2u_1+1)}_{2(u_2-u_1)+2} + 2\Delta x_{1,2}(2u_2+1) - 2\Delta_2^0 \Delta x_{1,2} + 2\Delta_1^0 \Delta x_{1,2}$$

$$= (2x_1+1)(u_2-u_1+1) + \Delta x_{1,2}(2u_2+1) + \Delta x_{1,2}(-\Delta_2+\Delta_1)$$