III A few words about our changing of the equations and its consequences. ((eq.3) → (eq.6)) (see Warning W1)

(eq.3¹) I. $\bar{n}_1 = (2x_1+1)y_1 - \Delta_1 \quad , \Delta_1 \in \{1,\dots,2x_1\}$

(eq.3²) II. $\bar{n}_2 = (2x_2+1)y_2 - \Delta_2 \quad , \Delta_2 \in \{1,\dots,2x_1\}$

→ In this equations are: $x_i, y_i \in \mathbb{N}$, $\bar{n}_i \in \mathbb{N}$

→ Then we used our Ansatz: $\bar{n}_1 = \bar{n}_2$

$$y_1 = y_2 + \frac{2\Delta x_{1,2} y_2 - \Delta_2 + \Delta_1}{2x_1+1}$$

and, of course, we searched for integer solution for y_1 and y_2 for this.

→ Since, we had problems to solve this, we changed (for $\Delta x_{1,2} > 1$) to

$$y_1' = y_2' + \frac{2\Delta x_{1,2} y_2 + \Delta x_{1,2}(-\Delta_2+\Delta_1)}{2x_1+1}$$

and we also looked here for integer solutions y_1' and y_2' for

(eq.6¹) I. $\bar{n}_1' = (2x_1+1)y_1' - \Delta x_{1,2}\,\Delta_1 \quad , \Delta_1 \in \{1,\dots,2x_1\}$

(eq.6²) II. $\bar{n}_2' = (2x_2+1)y_2' - \Delta x_{1,2}\,\Delta_2 \quad , \Delta_2 \in \{1,\dots,2x_1\}$

→ But...

... if we look at the relationship between this two versions (eq.3) and (eq.6), we get

(eq.9¹) I. $y_1' = y_1 + \frac{\Delta_1(-1+\Delta x_{1,2})}{2x_1+1}$

⇔ (eq.9²) II. $y_1 = y_1' - \frac{\Delta_1(-1+\Delta x_{1,2})}{2x_1+1}$

, we see that in general in (eq.9) y_i and y_i' are not integers at the same time.