

**Algorithm:**  $y := \text{TRMVP\_UT\_UNB\_VAR1}(U, x, y)$

**Partition**  $U \rightarrow \left( \begin{array}{c|c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array} \right),$

$x \rightarrow \left( \begin{array}{c} x_T \\ x_B \end{array} \right), y \rightarrow \left( \begin{array}{c} y_T \\ y_B \end{array} \right)$

**where**  $U_{TL}$  is  $0 \times 0$ ,  $x_T, y_T$  are  $0 \times 1$

**while**  $m(U_{TL}) < m(U)$  **do**

**Repartition**

$\left( \begin{array}{c|c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array} \right) \rightarrow \left( \begin{array}{c|c|c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array} \right),$

$\left( \begin{array}{c} x_T \\ x_B \end{array} \right) \rightarrow \left( \begin{array}{c} x_0 \\ \chi_1 \\ x_2 \end{array} \right), \left( \begin{array}{c} y_T \\ y_B \end{array} \right) \rightarrow \left( \begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right)$

$\psi_1 := u_{01}^T x_0 + v_{11} \chi_1 + \psi_1$

**Continue with**

$\left( \begin{array}{c|c} U_{TL} & U_{TR} \\ \hline U_{BL} & U_{BR} \end{array} \right) \leftarrow \left( \begin{array}{c|c|c} U_{00} & u_{01} & U_{02} \\ \hline u_{10}^T & v_{11} & u_{12}^T \\ \hline U_{20} & u_{21} & U_{22} \end{array} \right),$

$\left( \begin{array}{c} x_T \\ x_B \end{array} \right) \leftarrow \left( \begin{array}{c} x_0 \\ \chi_1 \\ x_2 \end{array} \right), \left( \begin{array}{c} y_T \\ y_B \end{array} \right) \leftarrow \left( \begin{array}{c} y_0 \\ \psi_1 \\ y_2 \end{array} \right)$

**endwhile**