

Algorithm: $y := \text{TRMVP_UT_UNB_VAR1}(U, x, y)$

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

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

where U_{TL} is 0×0 , x_T, y_T are 0×1

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

Repartition

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

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

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

Continue with

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

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

endwhile