Choleského rozklad

Pro danou Hermitovskou matici $\mathbf{A}$ najděte trojúhelníkovou matici $\mathbf{U}$, aby platilo: $\mathbf{A} = \mathbf{U}^H\mathbf{U}$

	$\mathbf{U}$
$\mathbf{U}^H$	$\mathbf{A}$

$$\begin{array}{cccc|cccc} & & & & 2 & 1 & 0 & -1 \\ & & & & 0 & 1 & 2 & 3 \\ & & & & 0 & 0 & 1 & 1 \\ & & & & 0 & 0 & 0 & 3 \\ \hline 2 & 0 & 0 & 0 & 4 & 2 & 0 & -2 \\ 1 & 1 & 0 & 0 & 2 & 2 & 2 & 2 \\ 0 & 2 & 1 & 0 & 0 & 2 & 5 & 7 \\ -1 & 3 & 1 & 3 & -2 & 2 & 7 & 20 \end{array}$$

$$u_{ii} = \sqrt{a_{ii} - \sum_{k=1}^{i-1} \overline{u_{ki}} u_{ki}}$$

$$\begin{array}{cccc|cccc} 2 & 0 & 0 & 0 & 2 & 1 & \mathbf{0} & -1 \\ 1 & 1 & 0 & 0 & 0 & 1 & \mathbf{2} & 3 \\ \mathbf{0} & \mathbf{2} & \mathbf{?} & 0 & 0 & 2 & \mathbf{5} & 7 \\ -1 & 3 & . & . & -2 & 2 & 7 & 20 \end{array}$$

$$u_{ij} = \frac{1}{u_{ii}} \left(a_{ij} - \sum_{k=1}^{i-1} \overline{u_{ki}} u_{kj} \right)$$

$$\begin{array}{cccc|cccc} 2 & 0 & 0 & 0 & 2 & 1 & 0 & \mathbf{-1} \\ 1 & 1 & 0 & 0 & 0 & 1 & 2 & \mathbf{3} \\ \mathbf{0} & \mathbf{2} & \mathbf{1} & 0 & 0 & 2 & 5 & \mathbf{7} \\ -1 & 3 & . & . & -2 & 2 & 7 & 20 \end{array}$$