$$\begin{bmatrix} 1 & & \theta \\ & \ddots & \\ \theta & & 1 \end{bmatrix} \quad \text{autovalori ?}$$

$$Ax = \lambda x$$

$$\det(A - \lambda I) = \det \begin{pmatrix} 1-\lambda & \dots & \theta \\ & 1-\lambda & \vdots \\ \vdots & \ddots & \vdots \\ \theta & \dots & 1-\lambda \end{pmatrix} \to \text{ordine } n$$

$$= (1-\lambda) \det \begin{pmatrix} 1-\lambda & \dots & \theta \\ \vdots & \ddots & \vdots \\ \theta & \dots & (1-\lambda) \end{pmatrix} \to \text{ordine } n-1$$

$$= \dots = (1-\lambda)^{n-2} \cdot \det \begin{pmatrix} 1-\lambda & \theta \\ \theta & 1-\lambda \end{pmatrix}$$

$$= (1-\lambda)^{n-2} \left[(1-\lambda)^2 - \theta^2 \right]$$

autovalori: $(1-\lambda)^{n-2} \cdot \left[(1-\lambda)^2 - \theta^2 \right] = 0$

$1 - \lambda = 0 \iff \lambda = 1 \qquad \sigma = n-2$

$(1-\lambda)^2 - \theta^2 = 0 \iff (1-\lambda-\theta)(1-\lambda+\theta) = 0$

$1 - \lambda - \theta = 0 \iff \lambda = 1 - \theta$

$1-\lambda+\theta=0 \iff \lambda=1+\theta$

Autovalori di A

$\lambda=1$

$\lambda=1-\theta$

$\lambda=1+\theta$

Se $\theta=0$ $\quad \lambda=1 \quad \sigma=n=\tau$

Se $\theta\neq0$ $\quad \lambda=1 \quad \sigma=n-2=\tau$

$\lambda=1+\theta \quad \sigma=\tau=1$

$\lambda=1-\theta \quad \sigma=\tau=1$

$|\theta|<1$