Relazione EG - Fatt LR : riassunto

EG

	t	nt
i	∃!	∄
ni	∃!	∄ / $\exists_\infty$

<u>Es</u> : $\begin{bmatrix} 0 & 0 \\ 1 & 1 \end{bmatrix}$ ∄ fatt

$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ $\exists_\infty$ fatt

<u>SE</u> A inv e S,D fatt LR

<u>ALLORA</u> $d_{11}, \dots, d_{nn} \neq 0$

ma : $A[k] = S[k]\,D[k] \quad k = 1, \dots, n$

q.di $\det A[k] = d_{11} \cdots d_{kk} \neq 0$.

Teo term $\Rightarrow$ EG t su A (assurdo!)

<u>Es</u> : $\forall \alpha \in \mathbb{R}$, $A(\alpha) = \begin{bmatrix} 1 & 2 & 0 \\ \alpha & 1 & 3 \\ 0 & 1 & -\alpha \end{bmatrix}$

1) determ per quali α EG t su $A(\alpha)$

2) discutere ∃ fatt LR di $A(\alpha)$

Classi di matrici per le quali EG t ($\Rightarrow$ ∃! fatt LR)

PDF : "a predominanza diagonale forte"

SDP : "simmetriche def positive"

PDF

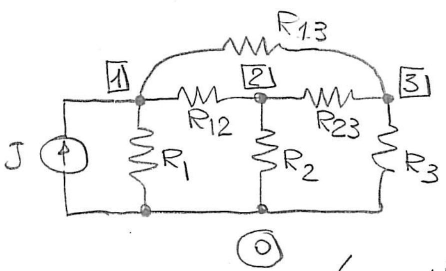
<u>def</u> : $A \in \mathbb{R}^{n \times n}$ a PDF se

- $|a_{kk}| > \sum_{i \neq k} |a_{ki}|$, $k = 1, \dots, n$ (per RIGHE)
- $|a_{kk}| > \sum_{i \neq k} |a_{ik}|$, $k = 1, \dots, n$ (per COLONNE)

<u>Es</u> : $\boxed{\begin{matrix} 2 & -1 & 0 \\ 0 & 2 & 1 \\ 0 & -1 & 2 \end{matrix}}$ PDF per R, <u>non</u> per C. ; $\boxed{\begin{matrix} 2 & 1 & 0 \\ 1 & 2 & -1 \\ 0 & 1 & 2 \end{matrix}}$ non PDF

<u>Oss</u> : A a PDF $\Rightarrow a_{kk} \neq 0 \quad \forall k$.

<u>Es</u> :



usando LKC :

$$\begin{bmatrix} J \\ 0 \\ 0 \end{bmatrix} = \begin{bmatrix} G_1 + G_{13} + G_{12} & -G_{12} & -G_{13} \\ -G_{12} & G_2 + G_{12} + G_{23} & -G_{23} \\ -G_{13} & -G_{23} & G_3 + G_{23} + G_{13} \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \\ V_3 \end{bmatrix}$$

($G = 1/R$, V_i diff di pot $\boxed{i} - \boxed{0}$)

... la matrice è PDF !