

$\mathcal{B} = \{v_1, \dots, v_n\}$  base,  $\mathcal{B}'$  base,  $f$  tl

$$\text{Im } A = \text{Cols } A$$

$$C(E, \mathcal{B}) = \left( (e_1)_{\mathcal{B}} \mid \dots \mid (e_n)_{\mathcal{B}} \right) \quad [f]_{\mathcal{B}\mathcal{B}'} = \left( f(v_1)_{\mathcal{B}'} \mid \dots \mid f(v_n)_{\mathcal{B}'} \right)$$

$$\text{Mono: } \text{ing } (\text{Nul } f = \{0\}) \mid \text{Epi: } \text{sdpr} \quad [f]_{EE} = C(\mathcal{B}, E) [f]_{\mathcal{B}\mathcal{B}} C(\mathcal{B}, E)$$

$$\text{tl: } f: V \rightarrow W \quad \dim V = \dim \text{Im } f + \dim \text{Nul } f \quad A \text{ sdpr} \Rightarrow \text{sdpr}$$

$$\text{Cholesky: } \text{SDP} \quad A = LL^t \quad (l_{ii} > 0) \quad \text{SDP: } x^t A x > 0 \quad \text{ó} \quad \det \text{sdpr} > 0$$

$$A \text{ dp} \Rightarrow A^t \text{ dp} ; \quad A \text{ sdpr} \Rightarrow A \text{ inversible} ; \quad A \text{ sdpr} \Rightarrow A^t A \text{ sdpr} ; \quad A \text{ sdpr} \Rightarrow A \text{ tiene LU}$$

$$\text{G. Sm. } a = v_1, \quad b = v_2 - \underbrace{\frac{\langle a, v_2 \rangle}{\|a\|_2^2} \cdot a}_{\text{Proy}_a(v_2)}, \quad c = v_3 - \underbrace{\frac{\langle a, v_3 \rangle}{\|a\|_2^2} \cdot a}_{\text{Proy}_a(v_3)} - \underbrace{\frac{\langle b, v_3 \rangle}{\|b\|_2^2} b}_{\text{Proy}_b(v_3)}$$

$$\text{Householder: } H = I - 2uu^t \quad \text{con } u = \frac{v-w}{\|v-w\|} \quad \text{con } \|v\|_2 = \|w\|_2 \text{ y } \|u\| = 1$$

$$Hv = w \text{ y } Hw = v : \text{Reflex. wrt plano ortog. a } u$$

$$\text{Projectores: } f \circ f = f, \quad [f]_{\mathcal{B}}^2 = [f]_{\mathcal{B}}, \quad \text{Nul } f \oplus \text{Im } f = V \quad v \in \text{Im } f \Rightarrow f(v) = v$$

$$\text{Proy. Ortog: } [P_S]_{EE} = \sum v_i v_i^t \quad (v_i \in \text{BON de } S) \quad \text{Nul } f = \text{Im } f^\perp \quad \text{Complemento ortog.}$$

$$A \cdot v = \lambda v \quad \lambda^k \text{ es eval de } A^k \text{ con evec. } v \quad \text{tr } A = \sum \lambda_i$$

$$\chi_A(\lambda) = \det(\lambda I - A) \quad A^k = C \cdot D^k \cdot C \quad \det A = \prod \lambda_i$$

$$\text{Nul } (\lambda I - A)$$

$$\mathcal{B} \text{ base de evecs} \Rightarrow [f]_{\mathcal{B}\mathcal{B}} = \begin{bmatrix} \lambda_1 & & 0 \\ & \ddots & \\ 0 & & \lambda_n \end{bmatrix}$$

$$\det A^t = \det A$$

$$\lambda \text{ eval de } A^t \Rightarrow \lambda \text{ eval de } A$$

$$\det \alpha A = \alpha^n \det A$$

$$\lambda \text{ eval de } A^{-1} \Rightarrow 1/\lambda \text{ eval de } A$$

$$\det AB = \det A \det B$$

$$\lambda \text{ eval de } A \Rightarrow 2\lambda \text{ eval de } 2A$$

$$\|\alpha x\| = |\alpha| \|x\|$$

$$\|x+y\| \leq \|x\| + \|y\|$$

$$\det A^{-1} = \frac{1}{\det A}$$

$$\langle x, ay + bz \rangle = a \langle x, y \rangle + b \langle x, z \rangle$$

$$Q^t = Q^{-1}$$

$$R = Q^t A$$