$\sigma(A) = (k, h-k, n-h)$ $h = h(A) = h(B)$

$\sigma(B) = (l, h-l, n-h)$

$A = \mathrm{diag}(a_1, \dots, a_k, -a_{k+1}, \dots, -a_h, 0, \dots, 0)$

$B = \mathrm{diag}(b_1, \dots, b_l, -b_{l+1}, \dots, -b_h, 0, \dots, 0)$

$a_i > 0, b_j > 0$

$B = P^T \cdot A \cdot P$, $\mathcal{B} = (o_1(P), \dots, o_n(P))$

$\varphi(x) = x^T A x$ kv. forma v bázi $\mathcal{E}$

$$[\varphi]_B = B \qquad A = \begin{pmatrix} \begin{matrix} \textcircled{>0} & \\ & >0 \end{matrix} & & \\ & \boxed{\begin{matrix} <0 & \\ - & <0 \end{matrix}} & \\ & & \textcircled{0} \end{pmatrix}$$

$$[\varphi]_E = A$$

$$\varphi(e_1) = \underset{>0}{a_{11}} \cdot \quad , \varphi(e_r) = \underset{>0}{a_r}$$

$$S = [e_1, \dots, e_r] \qquad \boldsymbol{x} \in S$$

$$\boldsymbol{x} = x_1 e_1 + \dots + x_r e_r$$

$$\varphi(\boldsymbol{x}) = x_1^2 \cdot a_1 + \dots + x_r^2 a_r$$

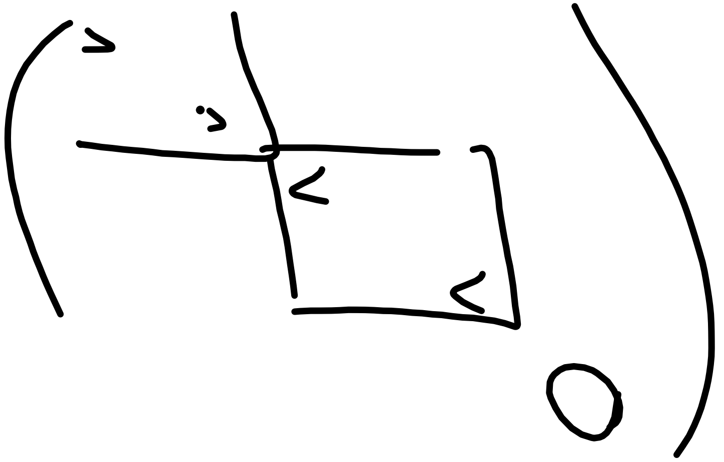
$$\varphi(\mathbf{x}) = \mathbf{x}^T A \mathbf{x} = \mathbf{x}^T A\left(\sum_{i=1}^{n} x_i e_i\right)$$

$$= \sum_i x_i \left(\mathbf{x}^T A e_i\right) = \sum_i \sum_j x_i x_j a_{ij} =$$

$$= \sum_i x_i x_i a_{ii} = \underset{\geq 0}{\sum x_i^2} \underset{> 0}{a_i} > 0$$

$\mathbf{x} \neq 0$

$B =$



$B = (o_1(P), \ldots$
$\ldots o_n(P))$

$$T = [\,p_{\ell+1}(P), \dots \; p_n(P)\,]$$

$$\mathbf{y} \in T \qquad \varphi(\mathbf{y}) \leq 0$$

$$\varphi(\mathbf{y}) = (\mathbf{y})_B^T \, B \, (\mathbf{y})_B$$

$$S \cap T = \{0\}$$

$$\dim(S+T) = \overset{k}{\overset{\shortparallel}{\dim(S)}} + \overset{n-\ell}{\dim(T)} =$$

$$= k + (n-\ell) \leq n \Rightarrow k \leq \ell$$

$$l \le k \implies l = k$$

symetricky.

$$A \equiv B \qquad B = P^T A P$$

$$\left.\begin{aligned} C &= Q^T A Q \\ C &= R^T B R \end{aligned}\right\} \quad \begin{aligned} &\sigma(A) \\ &\parallel \\ &\sigma(B) \end{aligned}$$

$$\sigma(A) = \sigma(B)$$

$$Q^T B Q = \begin{pmatrix} D & & \\ & E_1 & \\ & & 0 \end{pmatrix} = P^T A P$$

$$\implies A \equiv B$$

nad $\mathbb{C}$

$$A = \operatorname{diag}(d_1, \ldots, d_k,)$$

$$d_j = r_j(\cos\alpha_j + i \sin\alpha_j) \neq 0$$

$$c_j = \frac{1}{\sqrt{r_j}}\left(\cos\left(-\frac{\alpha_j}{2}\right) + i \sin\left(-\frac{\alpha_j}{2}\right)\right)$$

$$d_j \cdot c_j^2 = 1$$

$$(2) \not\equiv (1)$$

$$2 = x \cdot 1 \cdot x = x^2$$

$$\begin{pmatrix} 2 & 0 \\ 0 & 2 \end{pmatrix} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \not\equiv \begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix}$$

úno 26-11:08

$$\sigma(A) = (n, 0, 0)$$

$$A = I_n$$

$$A = P^T I_n P = P^T \cdot P \,.$$

$$\begin{pmatrix} 1 & & & \\ & 1 & & \\ & & \ddots & \\ 0 & & & 1 \end{pmatrix}$$

$A = P^T \cdot P$, P reg. $\quad q(x) = x^T A x$

$0 < |A| = |P|^2 \neq 0 \qquad q_k = q / S_k$

poz. def.

$S_k = [e_1, \dots, e_k]$

$x \in S_k, x \neq 0 \qquad x^T A x > 0$

$[q_k]_{e_1,\dots,e_k} = A_k$

$\Rightarrow |A_k| > 0.$

Nechť $|A_k| > 0 \quad \forall k$
$1 \leq k \leq n$

$$A \equiv \operatorname{diag}\left(\underset{>0}{|A_1|}, \underset{>0}{\frac{|A_2|}{|A_1|}}, \ldots, \underset{>0}{\frac{|A_n|}{|A_{n-1}|}} \right)$$

$$\sigma(A) = (n, 0, 0)$$

A je neg. def $\Longleftrightarrow$ $(-A)$ je poz. def.

$x^T A x < 0 \quad |(-1)$

$x^T(-A)x > 0$

$(-A)$ je poz. def $\Longleftrightarrow$ $|(-A_k)| > 0$

$$|(-A_k)| = (-1)^k |A_k|$$