Matrizen

Schreibweisen von Matrizen

$A \in \mathbb{K}^{n,p}, B \in \mathbb{K}^{p,m}, C \in \mathbb{K}^{n,m}$
$A = (a_{ij})_{i=1,...,m \quad j=1,...,p}$
$(A)_{ij} = a_{ij} = A_{(ij)}$
$C := A \cdot B = (c_{jk})_{j=1,...,n \quad k=1,...,m} = \left(\sum_{i=1}^{p} a_{ji} b_{i,k} \right)_{j=1,...,n \quad k=1,...,m}$

$$c_{jk} = \sum_{i=1}^{p} a_{ji} b_{i,k}$$

Rang

$$ZR(A) := spann\left(A(j,:), j = 1, ..., n\right)$$
$$SR(A) := spann\left(A(:,j), j = 1, ..., m\right)$$

$Rang(A) = dim(ZR(A)) = dim(SR(A))$

Dimensionsformel

$A \in \mathbb{K}^{n,n}$

$$\underbrace{dim(Kern(A))}_{\text{Anzahl Freiheitsgrade}} + Rang(A) = n$$

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