

## Positive semidefinite rank

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Let  $M \in \mathbb{R}^{p \times q}$  be a nonnegative matrix. The positive semidefinite rank of  $M$  is the smallest integer  $k$  for which there exist positive semidefinite matrices  $A_i, B_j$  such that  $M_{ij} = \langle A_i, B_j \rangle$ . The psd-rank has many appealing geometric interpretations, including semidefinite representations of polyhedra and information-theoretic applications. In this talk we will survey the main mathematical properties of psd-rank, including its geometry, relationships with other rank notions, and computational aspects.