$A \in K^{n \times n}$ $\quad P_A(X) = (X - \lambda_1)^{m_1} \cdot \ldots \cdot (X - \lambda_d)^{m_d}$

m_i is the algebraic multiplicity of λ_i

$\dim(Eig(A, \lambda_i))$ is the geometric multiplicity of λ_i

$Eig^k(A, \lambda) := \ker((\lambda \cdot E - A)^k)$ generalized eigenspace

$\{0\} \subseteq Eig(A, \lambda) \subseteq Eig^2(A, \lambda) \subseteq \ldots \subseteq Eig^r(A, \lambda) = Eig^{r+1}(A, \lambda) = \ldots$

- $r_i \leq \dim(Eig^{r_i}(A, \lambda_i)) = m_i$
- $K^n = Eig^{r_1}(A, \lambda_1) \oplus \ldots \oplus Eig^{r_d}(A, \lambda_d)$