Polynomial basis
$\vec{\lambda}^0$ $\vec{\lambda}^1$ $\vec{\lambda}^2$ $\vec{\lambda}^3$ $\vec{\lambda}^4$ $\vec{\lambda}^5$ $\vec{\lambda}^6$ $\vec{\lambda}^7$ $\vec{\lambda}^8$ k
Frequency profile
λ_1 λ_2 λ_3 λ_4 λ_5 λ_6 λ_7 λ_8 λ_9 n
More FP response,
require more computation time on eigend.
Better approximation/expressive power,
require more sophisticated polynomials.
Polynomial filter
$f = \sum_{i=0}^{k} \alpha_i \vec{\lambda}^i \in \mathbb{R}^n$
Pro: all FP response
Con: limited approximation ability
Limited expressive response on all FPs
Trunc-eigend. filter
$f = \mathrm{MLP} \circ \mathrm{PE}([\lambda_0, \ldots, \lambda_d]) \in \mathbb{R}^d, d \ll n$
Pro: Infinite approximation ability
Con: partial FP response
Infinite expressive response on partial FPs