Filter learning

- Data-driven: given a training set $\mathcal{T}$ of input-output pairs

$$\min_{\boldsymbol{\alpha},\boldsymbol{\beta}} \frac{1}{|\mathcal{T}|} \sum \|\mathbf{Hf} - \mathbf{y}\|_2^2 + \gamma r(\boldsymbol{\alpha}, \boldsymbol{\beta})$$

- Spectral filter design
  - Least-Squares
  - Chebyshev polynomials

2. Simplicial (Complex) Convolutional NNs