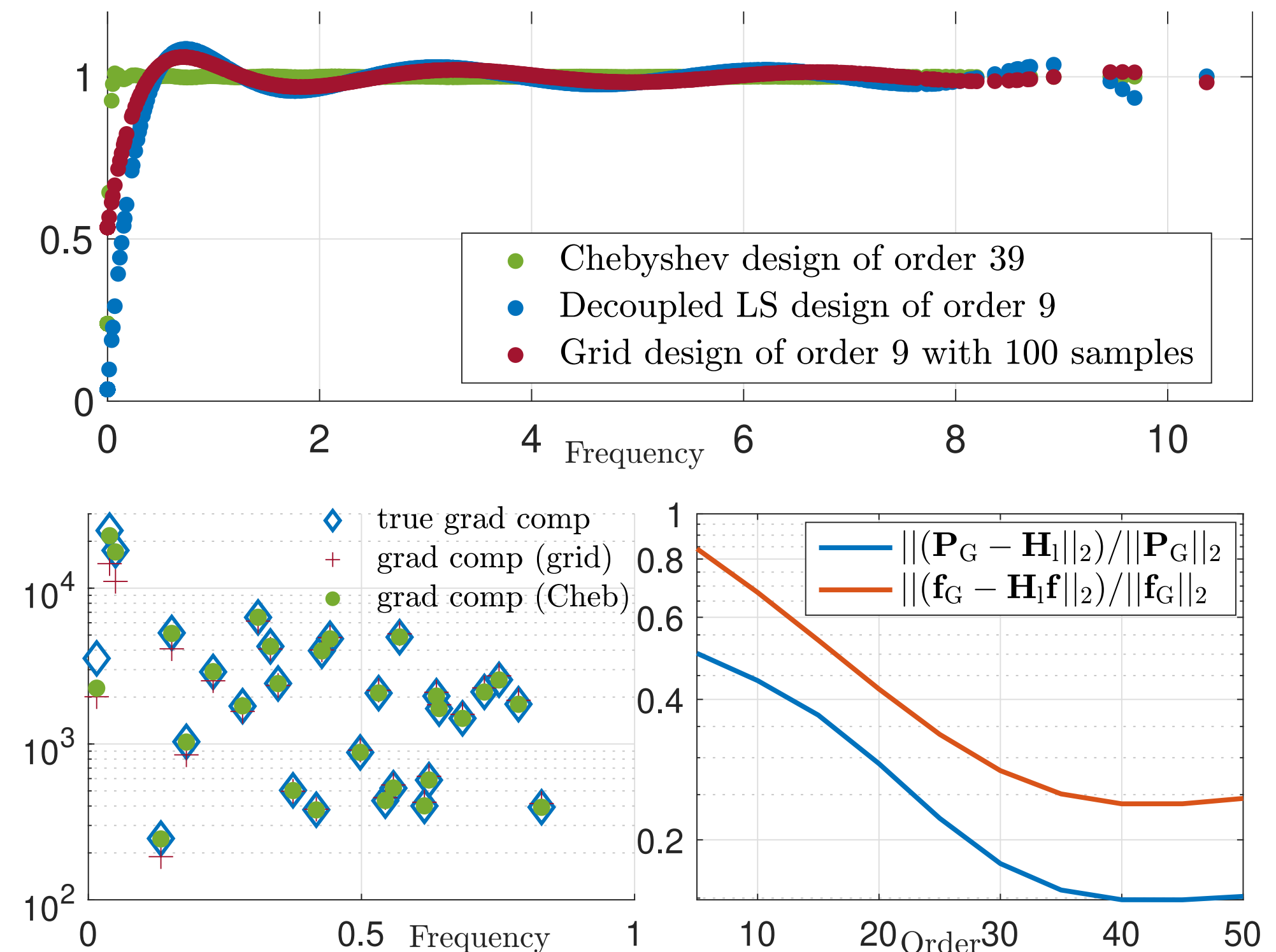
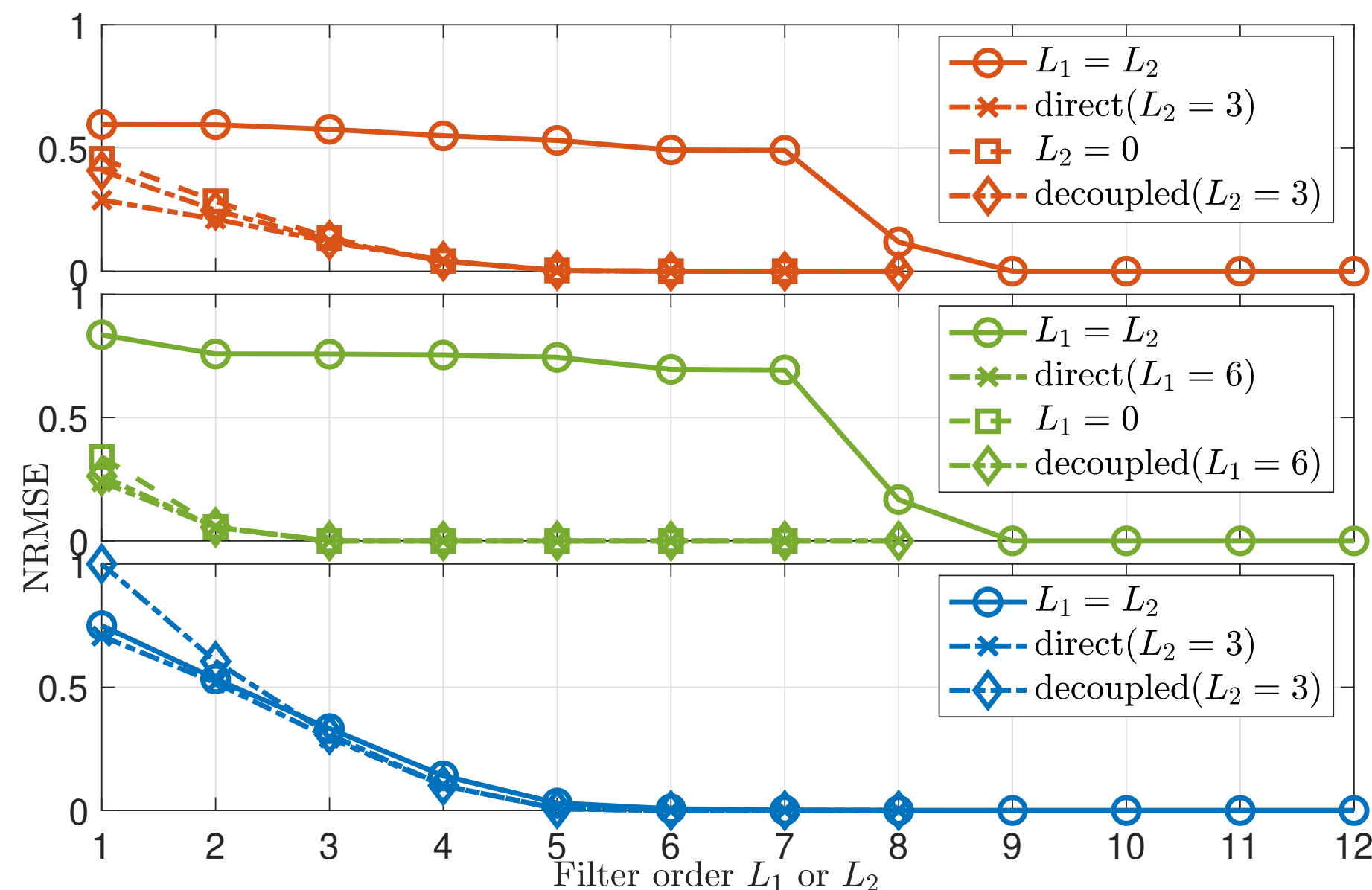


Applications

- Hodge component extractions
- Solving LS problem: $\mathbf{f}_G = \mathbf{P}_G \mathbf{f}$, $\mathbf{f}_C = \mathbf{P}_C \mathbf{f}$, $\mathbf{f}_H = \mathbf{f} - \mathbf{f}_G - \mathbf{f}_C$
- Convolutional filter implementation: closed form on coefficients

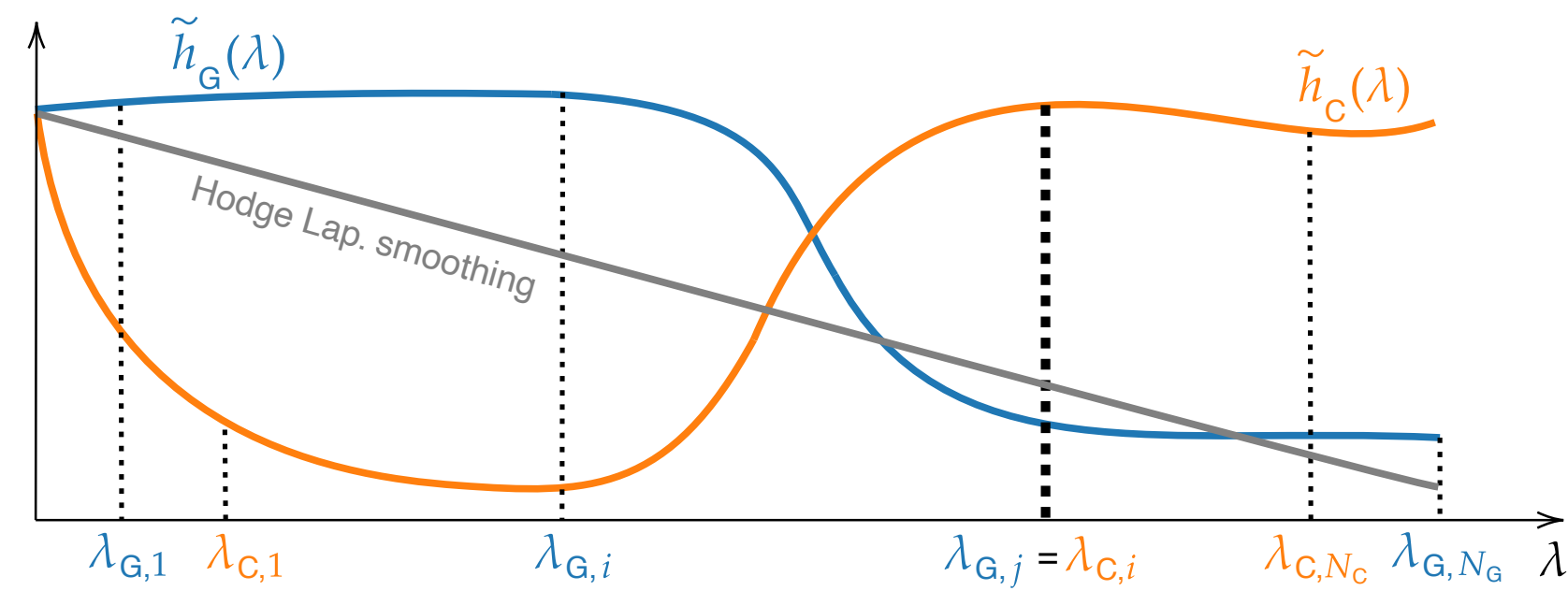
Gradient projection op.
 $\mathbf{P}_G = \mathbf{B}_1^\top (\mathbf{B}_1 \mathbf{B}_1^\top)^\dagger \mathbf{B}_1 = \mathbf{U}_G \mathbf{U}_G^\top$



Convolutional Learning on SCs

Linear

$$\mathbf{H} := \mathbf{H}(\mathbf{L}_d, \mathbf{L}_u; \boldsymbol{\alpha}, \boldsymbol{\beta}) = \sum_{k=0}^{K_d} \alpha_k \mathbf{L}_d^k + \sum_{k=0}^{K_u} \beta_k \mathbf{L}_u^k$$



Non-Linear

