Optimal transport regularization of dynamic inverse problems

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Poster Summary

- $\Omega \subset \mathbb{R}^d$ bounded spatial domain, $t \in [0,1]$ time, $\mathcal{M}(\Omega)$ Borel measures
- $\{H_t\}_t$ family of Hilbert spaces (measurement spaces - non isomorphic)
- $K_t^* \colon \mathcal{M}(\overline{\Omega}) \to H_t$ linear continuous operators (forward-operators)

Inverse Problem: Given $t \mapsto f_t \in H_t$, find a curve $t \mapsto \rho_t \in \mathcal{M}(\Omega)$ s.t.

$$K_t^* \rho_t = f_t \qquad \text{for a.e.} \quad t \in (0,1) \tag{P}$$

Example: (K_t^*, H_t) can model a Fourier transform with time-dependend masking

Poster Content:

- Robust regularization of (P) based on Dynamic Optimal Transport
- Analysis of sparsity induced by such regularization
- Algorithm for numerical reconstruction based on extremal points
- Application to dynamic spikes tracking

I am looking forward to see you at my poster!