

## THREE VIGNETTES IN COMPUTATIONAL OPTIMAL RECOVERY

**Simon Foucart**

Texas A&M University, United States

foucart@tamu.edu

The question addressed in this talk pertains to the utilization of observational data in order to optimally recover functions (or other objects) in a worst-case setting relative a model set based on approximation capabilities. The emphasis is put on the computational realization of the optimal recovery maps. In a first vignette, dealing with the space of continuous functions, I will showcase an algorithm to produce an optimal map—a linear one, to boot—for full recovery when the underlying approximation space is a Chebyshev space. In a second vignette, set in Hilbert spaces, I will indicate how to treat deterministically inaccurate data, especially given an  $\ell_1$ -bound, and again reveal the optimality of linear recovery maps. In a third vignette, focusing on the estimation of linear functionals but in arbitrary norm spaces, I will show that linear recovery maps are near optimal in the presence of stochastically inaccurate data when the noise distribution is log-concave.