

ON EXACT RECOVERY OF SIGNALS FROM THE PROJECTION ONTO POLYNOMIAL SPACES

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In the talk we will review some recent contributions (as well as ours) to the following prototype problem: We are given the projection of a superposition of Diracs onto a finite dimensional polynomial space over a manifold (e.g. trigonometric polynomials, algebraic polynomials, spherical harmonics) and we wish to recover the signal exactly and in particular, the locations of the knots. We will show that under a separation condition on the support of the unknown signal, there exists a unique solution through TV minimization over the space of Borel measures. Time allowing, we will present extensions to recovery of splines, streams of pulses, numerical algorithms, experimental results, stability under noise and more.

Joint work with Tamir Bendory (Technion) and Arie Feuer (Technion).