

*Symplectic A_k singularities, Schrödinger operators,
and inverse spectral theory*

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Joint work with Nikolay Martynchuk.

I will first survey classical results on symplectic normal forms for Morse Hamiltonians in \mathbb{R}^2 , together with the corresponding microlocal normal forms for pseudodifferential operators. These results have been used with some success for the (semiclassical) inverse spectral problem: can you recover the principal symbol from the quantum spectrum?

I will then turn to the recent studies of A_k singularities, which are a natural family of degenerate singularities. On the quantum side, they give rise to interesting normal forms involving Schrödinger operators, which motivates new conjectures concerning the inverse spectral problem.