

# Weber equation as a normal form with applications

Rodica Costin

Ohio State University, USA

We revisit the basic problem of studying the Schrodinger equation on the line for energies near a nondegenerate global maximum of a potential. We show that the problem is equivalent to a the same question for a Weber normal form. The diffeomorphism which effects equivalence lies in the same regularity class as the potential (analytic or infinitely differentiable) with respect to both variables, i.e., space and energy. We then apply the Weber normal form to the scattering problem for energies near the potential maximum. In particular we obtain a representation of the scattering matrix which is accurate up to multiplicative factors of the form  $1 + o(1)$ . (Work in collaboration with H. Park (OSU), W. Schlag (University of Chicago))