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Gino Biondini* (biondini@buffalo.edu), State University of New York at Buffalo, Department of Mathematics, Buffalo, NY 14260. *Long-time asymptotics of focusing nonlinear Schrodinger equations with non-zero boundary conditions.*

This talk is divided into three parts. First, I will describe how Deift-Zhou nonlinear steepest descent techniques for oscillatory Riemann-Hilbert problems can be used to study the long-time asymptotic behavior of solutions of the focusing nonlinear Schrodinger (NLS) equation with nonzero boundary conditions at infinity. Second, I will describe in detail the properties of the asymptotic state, including the number of oscillations and the local structure of the solution near each peak, showing in particular that in the long-time limit the solution tends to an ensemble of classical (i.e., sech-shaped) solutions of the NLS equation. Third, I will show that the existence of a similar asymptotic state is a property shared among a broad class of systems of NLS type possessing modulational instability. (Received January 17, 2017)