

**SPEAKER:**

Willie Wong, Michigan State University

**TITLE:**

Stability of plane waves

**ABSTRACT:**

In the small-data regime, the long-time behavior of solutions to quasilinear wave equations is by now fairly well (but not completely) understood, with the null condition playing an important role in low spatial dimensions. Recently the analogous problem is beginning to be studied for perturbations of plane-symmetric traveling waves. Previously I've proven, together with Speck, Holzegel, and Luk, that in the genuinely nonlinear setting, the formation of shocks in plane-symmetric traveling waves is stable under symmetry-breaking perturbations. The talk today will focus on recent work with Abbrescia that, for the relativistic membrane equation, the globally-existing (and non-decaying) traveling wave solutions are stable under small symmetry-breaking perturbations. One of the main analytical obstacles compared to the small-data regime is the transfer of energy from the "infinite energy" travelling wave solution to the perturbation, which results in inflation of higher-order energies and non-classical peeling estimates.