

The scattering map determines the nonlinearity

Speaker: Jason Murphy, Missouri University of Science and Technology

Abstract: We consider several classes of nonlinear Schrödinger equations (NLS) that admit a small-data scattering theory. This refers to the fact that we may construct small global-in-time solutions that scatter backward and forward in time to solutions to the underlying linear equation. This allows us to define the scattering map, which sends the scattered state at $t = -\infty$ to the scattered state at $t = +\infty$. After discussing the construction of the scattering map, we will consider several scenarios in which one can prove that the scattering map uniquely determines the nonlinearity. Along with reviewing some results due to Strauss and Watanabe, this talk will discuss some joint work with R. Killip and M. Visan.