JOSE PALACIOS, University of Toronto

Linearized dynamic stability for vortices of Ginzburg-Landau evolutions

We consider the problem of dynamical stability for the vortex of the Ginzburg-Landau model. Vortices are one of the main examples of topological solitons, and their dynamic stability is the basic assumption of the asymptotic "particle plus field" description of interacting vortices. In this talk we focus on co-rotational perturbations of vortices and establish a variety of pointwise dispersive and decay estimates for their linearized evolution in the relativistic (or Klein-Gordon) case. One of the main ingredients is the construction of the distorted Fourier transform associated with the (two) linearized operators at the vortex. The general approach follows that of Krieger-Schlag-Tataru and Krieger-Miao-Schlag in the context of stability of blow-up for wave maps and relies on the spectral analysis of Schrodinger operators with strongly singular potentials (see also Gezstesy-Zinchenko). However, since the vortex is not given by an explicit formula, and one of the operators appearing in the linearization has zero energy solutions that oscillate at infinity, the linear analysis requires some additional work. In particular, to construct the distorted Fourier basis and to control the spectral measure some additional arguments are needed, compared to previous works. This is joint work with Fabio Pusateri.