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Zakharov Shabat Spectra and Minimal Dirichlet Energy

In this talk (joint work with A. Tovbis) I will discuss the spectra of finite-gap solutions for fNLS We will show that the average intensity is equivalent to a problem in harmonic analysis of computing a specific Dirichlet energy associated with a domain in the upper half plane. We will also show that the Zakharov-Shabat spectra of finite gap solutions realize (local) minima of these Dirichlet energies amongst a well defined class of compact sets, a result that suggests a local stability property. Some considerations related to so-called "soliton gas condensates" will be discussed.