SMOOTHING FOR THE KDV EQUATION AND THE ZAKHAROV SYSTEM ON THE TORUS

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Abstract

In this talk we will consider the periodic KdV equation and the periodic Zakharov system in one dimension. We prove that the difference of the nonlinear and the linear evolutions is in a smoother space than the initial data. The method is based on normal form calculations and $X^{s,b}$ space estimates. We will also discuss applications such as almost everywhere convergence to initial data, growth bounds for higher order sobolev norms, and the existence and smoothness of global attractors. This is a joint work with Nikos Tzirakis.