

Oblique Shock Waves in Dispersive Eulerian Fluids

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Abstract: Two-dimensional, non-stationary oblique shock waves in a class of dispersive Eulerian fluids will be constructed using Whitham averaging. This construction takes advantage of irrotationality and recently developed methods for Whitham averaging of one-dimensional, non-integrable equations [1]. Example applications to Nonlinear Schrödinger (NLS) flows, water waves, ion-acoustic plasma, and optical media with saturable nonlinearity will be presented. Connections to supersonic dispersive, NLS flow over corners will also be discussed [2]. This is joint work with Boaz Ilan.

References:

1. G. El, Chaos 15, 037103 (2005).
2. M. A. Hoefler and B. Ilan, Phys. Rev. A 80, 061601(R) (2009).