

The Mathematical Analysis of the Coupling Between Radiation and Nematicons, Results and Open Questions

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We will review in some detail how to couple the motion of a nematicon with its shed dispersive radiation. The problem of coupling the dynamics of the nematicon to the radiation is solved using the appropriate conservation equations. We will show in some detail how this is done for nematicon propagation. For complicated motions I will show how geometric optics can be used to study the shedding of linear and angular momentum. Finally I will discuss the discrete counterpart and the effect of the internal soliton modes on the radiation. I will conclude by pointing out some of the difficulties in relating the asymptotic results of modulation theory to rigorous analytical results.