Energy minimizers in a phase transition model of light-matter interaction in nematic liquid crystals

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In this talk I will discuss global minimizers of a forced, non autonomous, one dimensional, phase transition model. I will describe the mechanism by which, depending on the strength of the forcing, various topologically non trivial minimizers (kinks) appear. Their local profiles are in general different than that of the usual one dimensional kink in autonomous media. In some range of parameters corner layer minimizes the energy, while in another range an entirely novel type of phase transition, which we named shadow kink, makes its appearance. The model is a one dimensional version of a model of matter-light interaction in nematic liquid crystal based on a thin sample limit of the Oseen-Frank energy. The qualitative behavior of global minimizers is consistent with the original model and also that it has some similarities with the minimizers of the Gross-Pitaevskii energy appearing in the theory of Bose-Einstein condensates.