

1030-35-201

John K Hunter* (jkhunter@ucdavis.edu), Department of Mathematics, University of California, Davis, Davis, CA 95616. *Nonlinear variational systems of wave equations.*

We will consider the propagation of orientation waves through a director field with rotational inertia and the Oseen-Frank potential energy from liquid crystals. The resulting system of PDEs is an example of a variational system of wave equations. There are two wave modes, which we call splay and twist waves. The splay waves are described asymptotically by the completely integrable Hunter-Saxton equation, while the twist waves are described asymptotically by a new cubically nonlinear equation that bears a surprising relationship with the Hunter-Saxton equation. This is joint work with Giuseppe Ali. (Received August 02, 2007)