

Abstract Submitted  
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**Coarse-grained model and light scattering of the twist-bend nematic phase**<sup>1</sup> SHAIKH SHAMID, DAVID ALLENDER, JONATHAN SELINGER, Kent State Univ - Kent — We develop a coarse-grained version of the continuum theory for the twist-bend (TB) nematic phase of liquid crystals. In this theoretical approach, we begin with an ideal, undistorted TB phase, which has a heliconical modulation of the director field. We then calculate the elastic free energy cost of a position-dependent local rotation of the director away from the ideal state. We diagonalize this free energy density to find the eigenmodes of the system. Of these eigenmodes, the soft mode can be regarded as a smectic-like distortion of periodic planes in the TB phase; this mode has effective elastic constants for layer compression and curvature. By comparison, the hard mode involves director variations away from the optimum cone angle. This calculation leads to a prediction for light scattering from the TB nematic phase.

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