

Ward Identities and Semi-Soft Elasticity

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Ward identities provides general, model-independent information about Goldstone modes and about relations among rigidities associated with them. This talk will review the information that these identities can provide about the elastic moduli in semi-soft nematic elastomers, particularly in the vicinity of the semi-soft plateau where the stress is almost independent of strain. It will, show in particular, that the elastic modulus describing the energy of shear strains in the plane defined by the direction of frozen uniaxial anisotropy and the direction, perpendicular to it, of imposed stress vanishes identically at the boundaries of the semi-soft plateau. All other elastic constants of a biaxial system are nonzero at these points. Applications to specific models of nematic elastomers will be discussed as well.