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Defects in nematic colloids

Abstract

Nematic liquid crystals are characterized by their long-range orientational order: the molecules tend to align in a common direction. When foreign particles are immersed, the alignment is distorted, creating topological defects and fascinating self-assembly phenomena. In a joint work with S. Alama and L. Bronsard we study the nematic structure induced by one spherical particle, using Landau-de Gennes theory. Depending on particle size and surface anchoring, we give accurate descriptions of either quadrupolar configurations with Saturn-ring defect, or dipolar configurations with single hyperbolic defect.