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## **Cholesteric geometry and topology**

### **Abstract**

We propose a construction of a cholesteric pitch axis for an arbitrary nematic director field as an eigenvalue problem. Our definition leads to a Frenet-Serret description of an orthonormal triad determined by this axis, the director, and the mutually perpendicular direction. With this tool we are able to compare defect structures in cholesterics, biaxial nematics, and smectics. Though they all have similar ground state manifolds, the defect structures are different and cannot be, in general, translated from one phase to the other.