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Maier-Saupe Theory of Nematics in 4D PETER PALFFY-MUHORAY, Liquid Crystal Institute, Kent State University, XIAOYU ZHENG, Department of Mathematical Sciences, Kent State University — We extend the Maier-Saupe theory of nematics to 4 dimensions. We consider the interaction of cylindrically symmetric particles, and derive an effective single particle potential. Using this, we obtain the free energy and the self-consistent equation for the order parameter – a second rank traceless tensor. In 4D, the order parameter has three independent eigenvalues. We solve the self-consistent equation, and study the solutions as function of temperature. Our results give insight into the relation between orientational order parameters in different dimensions.

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