

Spontaneous formation of polarization chiral lattices and supercrystals in near-transition ferroelectric potassium-lithium-tantalate-niobate*

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In this talk I will review our recent experimental and theoretical exploration of spontaneous 3D ferroelectric vortex structures in near-transition potassium-lithium-tantalate-niobate. Results include linear and nonlinear optical analysis, broadband spectroscopy, and structural studies, these compared to phase-field numerical simulations. The picture opens up an interesting setting where high-dimensional symmetry breaking transitions support new mesoscopic crystal states with unexpected behavior, such as giant optical refraction and constraint-free second-harmonic-generation

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