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**Pattern Formation in Dipolar Bose Mixtures** RYAN WILSON, JQI, NIST and University of Maryland, CHRISTOPHER TICKNOR, Los Alamos National Laboratory, JOHN BOHN, JILA, NIST and University of Colorado, EDDY TIMMERMANS, Los Alamos National Laboratory — We consider the effects of dipole-dipole interactions on the immiscibility, or spatial separation of a binary Bose condensate. In free space, such interactions introduce anisotropic immiscibility thresholds, while the effects are still richer in trapped systems. In particular, we discuss the transition to immiscibility in a quasi-two dimensional geometry, created by the presence of a strong trapping potential in one direction. In contrast to the case of purely short-range interactions, the dipolar interactions introduce novel bistabilities and patterned phases in these mixtures. Further, we find that such features persist when the in-plane interactions are tuned to be anisotropic, resulting in stripe phases that can be accessed by simply tilting the dipole polarization. In addition to a composite Bogoliubov analysis, which provides a clear and qualitatively enlightening analysis of such physics, we present full numeric simulations that demonstrate the patterning and dynamics of these phases.

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