

Abstract Submitted
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Bose-Einstein condensate of rigid rotor molecules¹ EVAN JONES, US Naval Academy, JOSEPH SMITH, Western Washington University, SETH RITTENHOUSE, US Naval Academy, BRANDON PEDEN, Western Washington University, RYAN WILSON, US Naval Academy — We study the ground state phases of a quasi-two-dimensional Bose-Einstein condensate (BEC) of dipolar rigid rotor molecules subject to a DC electric field. In the high-field limit, this system acquires the properties of the fully polarized dipolar BEC, which exhibits a roton-maxon excitation spectrum, and has been thoroughly studied in the theoretical literature. In the weak-field limit, however, qualitatively new physics emerges due to the competition between the (weak) applied field and internal electric fields, which are produced by the molecules themselves. We characterize the ground states of this system, and study its unique dielectric properties.

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