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Dipolar Quasi-2D Bosons with Non-zero Dipole Tilt Angle PENGTAO SHEN, KHANDKER QUADER, Department of Physics, Kent State University, Kent, OH 44242 — We study properties of dipolar bosons in quasi-2D geometry, with dipoles oriented at an angle to the direction perpendicular to the confining 2D plane. Starting from time-dependent Gross-Pitaevski equations, and the resulting Bogoliubov-de Gennes equations, we calculate the excitation spectrum of the Bose-Einstein condensate, and explore possible instabilities of the system as the tilt angle, system density and the relative strength of the dipole-dipole interaction are varied. We study how the depletion of the condensate varies with respect to these parameters. We also explore the effect of the anisotropic dipolar interaction on results in different momentum directions.

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