**Finite Temperature Response of a 2D Dipolar Bose Gas at Different Dipolar Tilt Angles**[1] PENGTAO SHEN, KHANDKER QUADER, Kent State University — We calculate finite temperature (T) response of a 2D Bose gas, subject to dipolar interaction, within the random phase approximation (RPA). We evaluate the appropriate 2D finite-T pair bubble diagram needed in RPA, and explore ranges of density and temperature for various dipolar tilt angles. We find the system to exhibit a collapse transition and a finite momentum instability, signaling a density wave or striped phase. We construct phase diagrams depicting these instabilities and resulting phases, including a normal Bose gas phase. We also consider the finite-T response of a quasi-2D dipolar Bose gas. We discuss how our results may apply to ultracold dense Bose gas of polar molecules, such as $^{41}$K$^{87}$Rb, that has been realized experimentally.

Khandker Quader
Kent State University

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