Collective modes in two dimensional dipolar systems[1] QIUZI LI, EUYHEON HWANG, SANKAR DAS SARMA, University of Maryland-College Park — Motivated by recent experimental progress in producing and manipulating ultracold polar molecules with a net electric dipole moment, we theoretically consider the many body effects of two-dimensional dipolar systems with the anisotropic and long-range dipole-dipole interactions. We calculate the collective modes in 2D dipolar systems, and also consider spatially separated bilayer and superlattice dipolar systems. Our aim is to obtain characteristic features of these dipolar systems. We also consider the detailed quantitative comparison between these dipolar systems and the extensively studied usual parabolic two-dimensional electron systems.

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Date submitted: 20 Nov 2009   Electronic form version 1.4