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Emergence and lifting of frustration for dipolar molecules SEBASTIAN HUBER, EHUD ALTMAN, The Weizmann Institute of Science, EUGENE DEMLER, Harvard University — Ising spins on a triangular lattice are like a “harmonic oscillator” of geometric frustration. We address the general question of how this frustration is lifted in a system of dipolar molecules confined to $2+\epsilon$ dimensions. When the confinement to two dimensions is strong, the dipoles arrange in a triangular lattice. Upon reduction of the confinement, the dipoles undergo a transition out of the two dimensional plane, leading to an Ising degree of freedom. Spin–lattice coupling gives rise to an effective model in terms of quantum dimers. We discuss the resulting phases and the implications to current experiments with hetero-nuclear molecules.

Prefer Oral Session
 Prefer Poster Session

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