**Many-body physics of plane-polarized dipoles in a quasi-1D zigzag chain** NIRAJ R. GHIMIRE, SUSANNE F. YELIN, Univ of Connecticut - Storrs — We study the quantum phases of a quasi-one-dimensional zigzag chain of dipoles that are polarized in a plane by an external electric field. This simple system can be modeled using ultracold polar molecules, and be extended to study the topological quantities in triangular or hexagonal lattices. Since the Hamiltonian contains nearest-neighbor and next-nearest-neighbor hopping and interaction terms, the model does, however, allow for a rather complex phase diagram. Thus, this very simple model allows frustration and therefore phases that can be particularly interesting and unusual. We organize the system such that we can investigate the many-body effects effectively by using the density matrix renormalization group (DMRG) method.

Niraj R. Ghimire
Univ of Connecticut - Storrs