Defect-induced supersolidity with soft-core Bosons

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We discuss the quantum phases and dynamics of two-dimensional Bosons with finite-range soft-core interactions. In particular, we demonstrate that the ground state can be a commensurate density-wave-type supersolid. For low densities, the system is shown to form a solid in which superfluidity is provided by delocalized zero-point defects. This provides the first example of continuous-space supersolidity consistent with the Andreev-Lifshitz-Chester scenario. We discuss the possibility to observe some of these phases in cold atomic and molecular gases.