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Possible role of ^3He impurities in solid ^4He EFSTRATIOS MANOUSAKIS, Department of Physics, Florida State University, USA, and Department of Physics, University of Athens, Greece — We use a quantum lattice gas model to describe the essential aspects of the motion ^4He atoms and of a ^3He impurity in solid ^4He. We find that ^3He impurities promote ^4He atoms to interstitial sites and this can turn the bosonic quantum crystal into a metastable supersolid. It is suggested that ^3He impurity atoms, which produce the interstitial ^4He atoms, might have been reabsorbed by pure ^4He solid formed during the first stage of a multi-stage solid ^4He nucleation process. While we use the "spin"-wave approximation and low dimensional lattices to illustrate some of the ideas, we argue that the conclusions drawn from these studies may be valid for the real system.

Efstratios Manousakis
Florida State University

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