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The "Quantized Intrinsically Localized Modes" of a three-dimensional Lattice DERYA KANBUR, None, PETER RISEBOROUGH, Temple University — The low-energy Intrinsically Localized Modes (ILMs) of a cubic lattice with nearest-neighbor interactions and quartic anharmonicity are examined using the Ladder Approximation.Due to the symmetry of the lattice and the isotropic nature of the anharmonic interaction,the ILMs are characterized by an intrinsic spin corresponding to either $S = 0$ or $S = 2$ as well as by their spatial symmetries.The lowest energy ILMs form preferentially for center of mass momenta at which several van-Hove singularities coalesce at the upper edge of the (non-interacting) two-phonon continuum.For $T = 0$ and interactions larger than the critical value,the ILMs form above the top of the two-phonon continuum near the preferred values of $\underline{q}$,but fall into the continuum as $\underline{q}$ is shifted further away from the optimal value of $\underline{q}$.The critical value of the anharmonic interaction is found to be reduced for non-zero temperatures.The results are compared with experimental results on NaI.

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None

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