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Rotational spectrum of small, doped ^3He clusters TATJANA SKRBIC, SISSA - DEMOCRITOS (Trieste, Italy), SAVERIO MORONI, DEMOCRITOS - SISSA (Trieste, Italy), STEFANO BARONI, SISSA - DEMOCRITOS (SISSA) — In recent years, symmetry-adapted imaginary-time correlation functions have been extensively used to study the rotational spectrum of doped ^4He clusters within the frame of the reptation quantum Monte Carlo method. The success of this approach relies on the choice of suitable correlation functions, whose spectral resolution is dominated by few, well separated eigenvalues of the Hamiltonian. Under these conditions, reliable excitation energies can be extracted by inverse Laplace transform. This method has been tailored for bosons, due to the positivity of the ground-state wave-function and to the distinctive scarcity of low-lying states. For sufficiently small systems, however, the states of the discrete spectrum can be calculated in the same manner also with Fermi statistics, using appropriate generalizations of the correlation functions. We present rotational spectra for small ^3He clusters doped with molecules –such as CO_2 and OCS – whose effective moments of inertia, in ^4He clusters, feature a non-trivial dependence on the system size, with a pronounced turnaround for less than 10 atoms.

Prefer Oral Session
 Prefer Poster Session

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