

## Phonon excitation for $^4\text{He}$ confined in nanometer-size uniform channel under pressure

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We have studied the property of pressurized  $^4\text{He}$  confined in the honeycomb structure of a nanometer-size uniform straight channel by heat capacity measurements. In this system, due to the narrow channel, a cross over is expected to take place from the one-dimensional (1D) phonon state which is continuous in the axial direction, to the 3D-like state with the excitation to discrete energy levels in the cross section. However, the observed heat capacity shows the power law close to  $T^3$  between 0.3 and 0.7 K. The possibilities are that the excitation energy in the cross section is quite low, or that the  $T$ -cube term comes from both the honeycomb structure and  $^4\text{He}$  in the channel.