Heat Capacity of Solid ^{4}He in Aerogel

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Non-classical rotational inertia (NCRI) for solid ^{4}He has been observed both in bulk samples and samples confined in porous media like Vycor, porous gold and silica aerogel. Meanwhile, heat capacity measurements of bulk solid helium show a peak in addition to the T^3 term at similar temperatures as the NCRI onset. Our current understanding of the origin of NCRI involves the interconnection of dislocation network. However, it is not easy to understand that this model is applicable to NCRI observed inside ^{4}He confined in porous media where the pore size is as small as 7nm. Therefore, solid helium confined in porous media plays a very important role for further investigation. We have carried out heat capacity measurements of ^{4}He inside aerogel and Vycor. Our experiments show the existence of a heat capacity peak of ^{4}He in aerogel. Experiments of heat capacity as well as thermal conductivity measurements of solid ^{4}He in Vycor are in process. This work is supported by NSF under grant DMR-0706339.