

Abstract Submitted
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Torsional Oscillator Measurements of 2D Amorphous Solid ^4He ¹

SANGIL KWON, DUK YOUNG KIM, EUNSEONG KIM, Center for Supersolid & Quantum Matter Research and Physics Department, KAIST, Daejeon, South Korea, CENTER FOR SUPERSOLID & QUANTUM MATTER RESEARCH TEAM — Superfluidity in two dimensional (2D) helium-4 film adsorbed on various amorphous substrates is understood by Berezinskii-Kosterlitz-Thouless transition. The first few layers of helium are strongly localized to the substrates due to the van der Waals interaction and do not participate in superflow. However, these inert layers were proposed to be another candidate of supersolid.² We used a torsional oscillator technique to search for a possible 2D amorphous supersolid state. We investigated the drive dependence of helium film, assuming that the critical velocity is very small. We will present preliminary results on helium films adsorbed on a bare Vycor substrate and a hydrogen preplated Vycor substrate.

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²J. Sarfatti, Phys. Lett. A **30**, 300 (1969)

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