

# Colloquium Notice

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### *Supersolid state of matter*

Supersolid state of matter - phase combining properties of crystal and superfluid - was proposed by Andreev, Lifshitz and Chester for crystalline He<sup>4</sup> about 40 years ago. However, early experiments have failed detecting such state. Recently, Kim & Chan at Penn State have observed predicted by Leggett superfluid decoupling in rotational pendulum - so called non-classical rotational inertia (NCRI) of hcp solid He<sup>4</sup>. This has caused a strong wave of renewed interest to the supersolid state of matter. I will review main features of supersolid, its various theoretical scenarios and will focus on our most recent results obtained by first principles quantum Monte Carlo large scale simulations. Such simulations impose strong constraints on theories of supersolidity and indicate that structural crystalline defects are responsible for NCRI of He<sup>4</sup>.

Monday

**November 26, 2007**

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326