Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Observation of a metallic superfluid in a numerical experiment[1]
ASLE SUDBO, JO SMISETH, EIVIND SMORGRAV, EGOR BABAEV, Norwegian University of Science and Technology — We report the observation, in Monte Carlo simulations, of a novel type of quantum ordered state: *the metallic superfluid*. The metallic superfluid features ohmic resistance to counter-flows of protons and electrons, while featuring dissipationless co-flows of electrons and protons. One of the candidates for a physical realization of this remarkable state of matter is hydrogen or its isotopes under high compression. This adds another potential candidate to the presently known quantum dissipationless states, namely superconductors, superfluid liquids and vapours, and supersolids.

[1]Work supported by US National Science Foiundation and the NANOMAT Program, Research Council of Norway

Asle Sudbo
Norwegian University of Science and Technology.

Date submitted: 29 Nov 2005 Electronic form version 1.4