

by Prof. Wolfgang Ketterle

John D. MacArthur Professor of Physics, Director, MIT-Harvard Center for Ultracold Atoms, USA Associate Director, Research Laboratory of Electronics, 2001 Nobel Laureate in Physics

Title of the Talk

Cooling Close to Absolute Zero Temperature : a Recipe for Discoveries

ABSTRACT

hy do physicists freeze matter to extremely low temperatures? Why is it worthwhile to cool to temperatures which are a billion times lower than that of interstellar space? In this talk, I will experimentally demonstrate phenomena at low temperature and discuss new forms of matter. Of special interest are superfluids which can flow without dissipation. Recently, we have observed a supersolid which is gaseous, liquid and solid at the same time.

About the Speaker

Wolfgang Ketterle (born 21 October 1957) is a German physicist and professor of physics at the Massachusetts Institute of Technology (MIT). His research has focused on experiments that trap and cool atoms to temperatures close to absolute zero. He led one of the first groups to realize ——Bose-Einstein condensation in these systems in 1995. For this achievement, as well as early fundamental studies of condensates, he was awarded the Nobel Prize in Physics in 2001, together with Eric Allin Cornell and Carl Wieman. After achieving the BoseEinstein condensation in dilute gases in 1995, his group was in 1997 able to demonstrate interference between two colliding condensates, as well as the first realization of an "atom laser", the atomic analogue of an optical laser. In addition to ongoing investigations of Bose—Einstein condensates in ultracold atoms, his more recent achievements have included the creation of a molecular Bose condensate in 2003, as well as a 2005 experiment providing evidence for "high temperature" superfluidity in a fermionic condensate.

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Venue SCIENCE CITY - MINI AUDITORIUM at 4.00 pm