## "BOSE-125" PUBLIC LECTURE

by

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

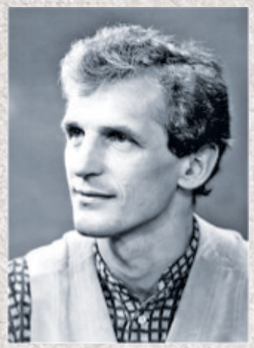
### Cooling close to absolute zero temperature : a recipe for discoveries

### ABSTRACT

Why 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.







## Prof. Wolfgang Ketterle

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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 Bose-Einstein 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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BOSE 2018 125th Birth Anniversary Celebrating

# S N BOSE MEMORIAL LECTURE

on

**TWENTY SIXTH MARCH 2018**

&

# "BOSE-125" PUBLIC LECTURE

on

**TWENTY SEVENTH MARCH 2018**


सत्येन्द्र नाथ बसु राष्ट्रीय मौलिक विज्ञान केन्द्र

**Satyendra Nath Bose National Centre for Basic Sciences**

## S N BOSE MEMORIAL LECTURE

by

**Prof. Wolfgang Ketterle**
John D. MacArthur Professor of Physics
Director, MIT-Harvard Center for Ultracold Atoms
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## New forms of matter with ultracold atoms: supersolid, superradiance, and polar molecules

### ABSTRACT

The properties of ultra cold atoms can be profoundly modified with the help of laser beams. They can couple spin and motion and turn a Bose-Einstein condensate into a super solid. Lasers can also photo-associate ultra cold atoms into ultra cold molecules. With triplet NaLi, we have recently realized an ultra cold molecule with both electric and magnetic dipole moments.



## S. N. BOSE NATIONAL CENTRE FOR BASIC SCIENCES

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Staff and students of S.N. Bose National Centre for Basic Sciences request the pleasure of your company at the

## S N Bose Memorial Lecture

by

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

on

**26th March 2018 | 10am**

To celebrate
125th Birth Anniversary of Satyendra Nath Bose

**Venue**
SILVER JUBILEE HALL
S N Bose National Centre for Basic Sciences
Block-JD, Sector-III, Salt Lake City,
Kolkata – 700 006, India

**Prof. Samit Kumar Ray**
Director



## S. N. BOSE NATIONAL CENTRE FOR BASIC SCIENCES

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## "Bose -125" Public Lecture

by

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

on

**27th March 2018 | 04pm**

To celebrate
125th Birth Anniversary of Satyendra Nath Bose

**Venue**
SCIENCE CITY - MINI AUDITORIUM
J.B.S. Haldane Avenue, Kolkata-700 046

**Prof. Samit Kumar Ray**
Director