

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

2A&B, Raja S.C. Mullick Road,

Jadavpur, Kolkata 700032, India

Seminar

Title: Bose-Einstein Condensates

Speaker: Professor Sadhan Kumar Adhikari, Institute of Theoretical Physics (IFT), Sao Paulo State University (UNSEP), Brazil

Date: 03rd April, 2018

Time: 12:00 Noon

Venue: C.V. Raman Hall

All are cordially invited to attend the lecture.

With regards,

Bimalendu Deb

Head,

Raman Centre for Atomic, Molecular & Optical Sciences (RCAMOS),

Indian Association for the Cultivation of Science (IACS),

Jadavpur, Kolkata 700032.

Professor,

Department of Materials Science, IACS

<http://www.iacs.res.in/matsc/msbd/>

Abstract:

A brief introduction to Bose-Einstein Condensates at an elementary level suitable for non-specialists will be given. Some recent phenomena on solitons and vortices in BEC will be discussed.

About Professor Sadhan Kumar Adhikari:

Sadhan Kumar Adhikari is a professor of physics, at the Institute of Theoretical Physics (IFT) of the São Paulo State University (UNESP), Brazil, since 1991. He obtained B. Sc. (Hons. in Physics) from Presidency College, Kolkata in 1965, M.Sc.(Physics) from University of Calcutta, in 1968, and Ph.D. in physics from University of Pennsylvania in 1973. His research interests include Cold Trapped Atoms, Quantum Mechanical Few Body Problems, Atomic Scattering, Numerical Analysis, Complex Systems, Superconductivity and Superfluidity. His current research focus on various properties of bosonic and fermionic superfluids, vortices and solitons in superfluids, Anderson localization of bosonic superfluids, Josephson oscillation and self trapping in superfluids, collapse in superfluids in the presence of attractive interaction, superfluidity in dipolar atoms with magnetic dipole moment

interacting via angle-dependent anisotropic interaction, etc. His notable contributions to physics include the formulation of quantum scattering theory in two dimensions [1] in 1986, renormalization in nonrelativistic quantum mechanics [2], few-body scattering in nuclear and atomic physics [3,4]. etc. In 2012 he and his colleagues from the Institute of Physics, Scientific Computing Laboratory, Belgrade wrote C programs to solve Gross–Pitaevskii equation and to study Bose–Einstein condensates using the Crank–Nicolson method.[5]. He is the author of two books on scattering theory published by Academic Press, San Francisco, Hard cover (1988), [6] Paperback (2012) and eTextbook (2012) and by John Wiley & Sons, New York, 1998 [7].

- [1] Sadhan K. Adhikari (1986). ["Quantum scattering in two dimensions". *American Journal of Physics*. *AAPT*. 54, 362.](#)
- [2] S. K. Adhikari; T. Frederico; I. D. Goldman (1995). ["Perturbative Renormalization in Quantum Few-Body Problems". *Physical Review Letters*. 74, 487.](#)
- [3] S. K. Adhikari; I. H. Sloan (1975). ["Separable expansion of the t matrix with analytic form factors". *Physical Review C*. 11, 1133](#)
- [4] S. K. Adhikari; A. Delfino; T. Frederico; I. D. Goldman; L. Tomio (1988). ["EFIMOV AND THOMAS EFFECTS AND THE MODEL DEPENDENCE OF 3-PARTICLE OBSERVABLES IN 2 AND 3 DIMENSIONS". *Physical Review A*. *American Physical Society*. 37, 3666.](#)
- [5] Dušan Vudragović; Ivana Vidanović; Antun Balaž; Paulsamy Muruganandam; Sadhan K. Adhikari (September 2012). ["C programs for solving the time-dependent Gross–Pitaevskii equation in a fully anisotropic trap". *Computer Physics Communications*. ">Elsevier. 189, 2021–2025](#)
- [6] S. K. Adhikari and K. L. Kowalski (1988). ["Dynamical Collision Theory and its Applications". *Academic Press*, San Francisco. ISBN 0124121632.](#)
- [7] S. K. Adhikari (1998). ["Variational Principles and the Numerical Solution of Scattering Problems". *John Wiley & Sons*, New York. ISBN 0471181935.](#)