S. N. BOSE NATIONAL CENTER FOR BASIC SCIENCES
Block JD, Sector III, Salt Lake, Kolkata 700 098

Date: 22/11/2006

S. N. Bose National Centre for Basic Sciences, an autonomous institute under the Department of Science & Technology, Government of India invites applications from Indian nationals for **Research Associateship** within the scheme of Swarnajayanti Research Grant:

Project Title: Realistic Theory of Strongly Correlated Electron System

Description: In the past year, there has been an enormous effort into improving the description starting from local density approximation (LDA) by combining *ab-initio* calculations with many-body methods. In this respect, a modern many-body approach, namely Dynamical Mean Field Theory (DMFT) has turned out to be a major advancement, which though freezes the spatial fluctuations, takes fully into account the temporal fluctuations. LDA + DMFT approach which merges LDA with DMFT has proved to be a major breakthrough for the realistic modeling of correlated materials. Depending on the strength of the electronic correlation, a LDA + DMFT calculation may yield the weakly correlated LDA results, a strongly correlated metal, or a Mott insulator. The project will involve carrying out realistic calculations of strongly correlated electron system which will use the localized Wannier functions generated by NMTO method to construct the LDA Hamiltonian and solve the many-body problem by DMFT. The application of the technique will focus on materials of recent interest.

Requirement: The project will involve quantum mechanical calculations. A many-body background and/or DFT calculations will be preferred.

Qualifications: Fresh PhDs. Applicants who have submitted their PhDs are also eligible.

Salary: Rs 12,000 (consolidated) per month + HRA as per rules.

Period of Appointment: Initially for a period of one year, with the possibility of extension of another year on successful completion of first year.

Interested candidates may apply with complete bio-data and two letters of reference to Dr Tanusri Saha-Dasgupta (tanusri@bose.res.in) within 1 month of the date mentioned above. The subject line may be inscribed with the words '**Application for Research Associate**'. Applications by email are acceptable.

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