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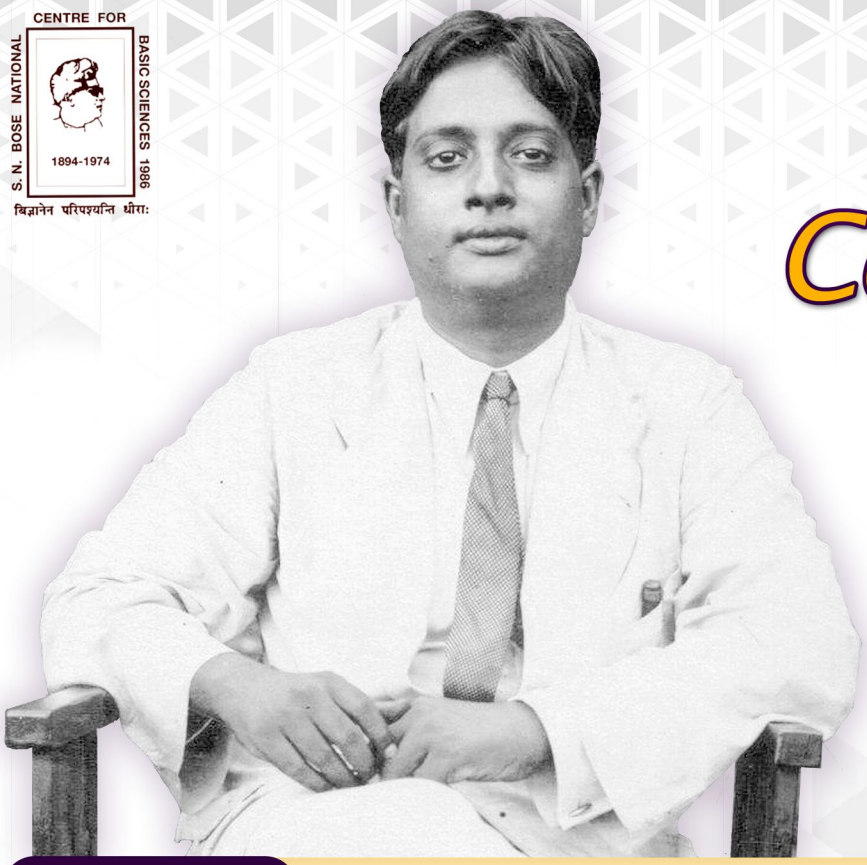

BOSE Colloquium

19 AUG 2026 **4**PM

Silver Jubilee Hall

Live Stream

Webinar

TITLE

NV-magnetometry for a hybrid quantum platform

ABSTRACT

Solid-state spin defects, such as nitrogen-vacancy (NV) centers in diamond, have emerged as versatile quantum sensors, enabling measurements of magnetic fields, temperature, strain, and electric fields with nanometre-scale spatial resolution under both cryogenic and ambient conditions. In my research, we aim to harness these capabilities to develop a non-invasive magnetic microscope that can probe magnetism down to the scale of individual molecules on surfaces. Such a capability would provide new insights into quantum materials and molecular spin systems while avoiding many of the limitations of conventional scanning probe techniques. In this talk, I will present our ongoing efforts toward this goal, discuss the key experimental challenges involved, and highlight how overcoming them could open new opportunities for hybrid quantum technologies and nanoscale materials research.

SPEAKER

Prof. (Dr.) Aparajita Singha
Chair of Nanoscale Quantum Materials in the Institute for Solid State and Materials Physics at the Technische UniversitÃ¤t Dresden

Prof. Dr. Aparajita Singha is presently the Chair of Nanoscale Quantum Materials in the Institute for Solid State and Materials Physics at the Technische Universität Dresden. She has received the Emmy Noether grant from the DFG. She also serves as the PI of the cluster of excellence ct.qmat. She did her master's from IIT Bombay in 2010 and completed her PhD degree from EPFL in 2017. She then served as a group leader at the Max-Planck Institute for Solid State Research, Stuttgart, Germany. Her research activities are focused in the field of nanoscale magnetism, coherent quantum control, and nanoscale transport phenomena using scanning probe techniques (scanning NV-magnetometry, AFM/STM).

S. N. Bose National Centre for Basic Sciences
Block JD, Sec III, Salt Lake, Kolkata 700106

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