

# Open Talk

12<sup>th</sup> March, 2018

4:00 PM

Fermion Hall

SPEAKER

**Dr. Sudipta Singha Roy**

Quantum Information Theory (2-527)

Department of Applied Mathematics,

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TITLE OF THE TALK

**Response to defects in multi- and bipartite entanglement  
of isotropic quantum spin networks**

ABSTRACT

Resonating valence bond states have played a crucial role in the description of exotic phases in strongly correlated systems. It is therefore interesting to understand how quantum correlations are distributed among the constituents of these composite systems. In this regard, we consider an isotropic RVB network of spin-1/2 particles with a finite fraction of defects, where the corresponding wave function of the network is rotationally invariant under the action of local unitaries. By using quantum information-theoretic concepts like strong subadditivity of von Neumann entropy and approximate quantum teleportation, we prove analytically that in the presence of defects, caused by loss of a finite fraction of spins, the RVB network sustains genuine multisite entanglement, and at the same time may exhibit finite moderate-range bipartite entanglement, in contrast to the case with no defects.

HOST FACULTY

**Professor Archan S Majumdar**

Senior Professor

Department of Astrophysics & Cosmology

**S N Bose National Centre for Basic Sciences**