

## Area Seminar

Title Perfect Entanglement Transport in Quantum Spin Chain System

Date and Time 08/11/2011 16:00:00

Speaker Dr. Sujit Sarkar

Poorna Prajna Institute of Scientific Research, Bangalore

Area Theoretical Physics

Venue Room No. 469

Abstract We propose a mechanism for perfect entanglement transport in anti-ferromagnetic (AFM) quantum spin chain systems with modulated exchange coupling and also for the modulation of on-site magnetic field. We use the principle of adiabatic quantum pumping process for entanglement transfer in the spin chain systems. We achieve the perfect entanglement transfer over an arbitrarily long distance and a better entanglement transport for longer AFM spin chain system than for the ferromagnetic one. We explain analytically and physically - why the entanglement hops in alternate sites. We find the condition for blocking of entanglement transport even in the perfect pumping situation. Our analytical solution interconnects quantum many body physics and quantum information science.