

## **Seminar**

# **Effect of Topological Defects in Quantum Mesoscopic Systems and in Quantum Solids**

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The subject of topological defects has become a very attractive field of study given its apparent relevance to a diverse systems ranging from cosmology to condensed matter. The defects in condensed matter systems play an important role in determining the physical properties of a solid including mechanical, electronic, optical properties etc. as well as equilibrium and dynamics of phase transitions. In this talk, I will present the study of lattice defects in Rashba spin-orbit coupled system, graphene and in quantum solids. I will show that the Burger's vector of a defect lead to a finite spin current in spin-orbit coupled system and conical defects in graphene gives rise to valley asymmetric energy dispersion. These features may be of direct interest to the subject of spintronics and valleytronics. I also discuss the dislocations dynamics in solid Helium-4 in the context of supersolid phase.

***Wednesday, Jun 8<sup>th</sup> 2016***

***4:00 PM (Tea/Coffee at 3:45 PM)***

***Seminar Hall, TCIS***