



# Physical Research Laboratory, Ahmedabad

## Colloquium 18-06

**Speaker :** Dr. Navinder Singh  
Associate Professor, Physical Research Laboratory, Ahmedabad

**Title :** "The Story of Magnetism"

**Time :** Wednesday, 30 May 2018, 16.00 hrs.

**Venue :** K. R. Ramanathan Auditorium, PRL

### Abstract

Every child has at one time or another played with a magnet and been fascinated by its mysterious ways. It is an uncanny feeling to experience the repulsion between the like poles of two magnets. The "magical" properties of magnets have fascinated mankind over the centuries. Questions like why only iron, cobalt, nickel, or their alloys show ferromagnetic behaviour whereas other elements do not, comes to every curious mind? This presentation is devoted to the historical development of the key ideas in the vast field of magnetism. The presentation follows a chronological order (which is also the logical one from the conceptual point of view). We start from the Greeks, to medieval times to and the 20th century, and highlight the key contributions of people like William Gilbert; Coulomb; Poisson; Oersted; Ampere; Faraday; Maxwell; Pierre Curie; Langevin; Weiss; van Vleck; Heisenberg; Pauli; Slater; Stoner; Anderson; Moriya, Hubbard and others. It will be shown how the advent of quantum mechanics resolved some baffling problems in the field. The current problems in the magnetic properties of strongly correlated electronic systems will be presented, and finally we will summarize the current status of the field of magnetism.

### The Speaker

Dr. Navinder Singh did his B.E. in Electronics Engineering, after which he shifted to theoretical physics and obtained his PhD in theoretical condensed matter physics from the Raman Research Institute, Bangalore in 2006. His post doctoral training was from IOP Bhubaneswar; Holon Institute of Technology, Israel; and the University of Toronto, Canada. He is currently a faculty member in Theoretical Physics division at PRL. His research interests are in the nature of electronic transport and magnetic properties in strongly correlated systems like strange metals and in the theory of (un)conventional superconductivity. He has published over 40 papers in peer reviewed journals and has authored a book entitled "Electronic Transport Theories: From Weakly to Strongly Correlated Materials", CRC Press (2016). He is also interested in Science Popularization activities, and has contributed to the design of several experimental set-ups to this end.

Tea at 15:30 hrs.  
**ALL ARE WELCOME**

