

IEEE I&M Society New Zealand Chapter Seminar

Jointly organized by

School of Engineering and Advanced Technology, Massey University

Title: Ohm's Law for Superconductor

Date: 10th June 2011, 11.00 am – 12.00 pm

Venue: R12 Presentation laboratory, Riddet Building, Massey University, Palmerston North

Presenter: Dr. Kailash P. Thakur, Landcare Research, Palmerston North

Abstract: The seminar will present a broad survey and overview of the current research work on superconductors. I will talk about current- voltage (I - V) behaviour of superconductor which varies with frequency. I will discuss the metastability of superconducting vortex matter, resulting from the competition between the experimental speed and the response speed of vortices. This I - V behaviour controls the magnetic and transport properties of the superconductor and its ac loss. The behaviour of superconductor changes with several factors including its geometry, the presence of ferromagnetic materials in the neighbourhood and external magnetic field.

Biography: Dr. Kailash Thakur is a postdoctoral researcher at the Landcare Research since September 2010. Formerly, He was a senior scientist at Industrial Research Limited in the HTS team in Gracefield, Lower Hutt. He was Professor of Physics at University of Asmara, Bhagalpur University. He holds a degree of D.Sc. and Ph.D. from Allahabad University and M.Sc. and B.Sc Hons from Bhagalpur University, India. He has authored over 100 research papers in international journals. His research interests include, high temperature superconductors and devices, microwave inverse scattering, medical imaging, vehicle dynamics, human factors in engineering, atomistic models and crystal elasticity.

Further reading:

- K.P. Thakur, A. Raj, E.H. Brandt and Pamidi V. Sastry, “**Frequency dependent critical current and transport ac loss of superconductor strip and Roebel cable**,” *Supecond Sci. Technol.* 24, 065024 (2011)
- K.P. Thakur, A. Raj, E.H. Brandt and Pamidi V. Sastry, “**Frequency dependent magnetization of superconductor strip**,” *Supecond Sci. Technol.* 24, 045006 (2011)
- K.P. Thakur, Z. Jiang, M.P. Staines, N.J. Long, and A. Raj, “**Current carrying capability of HTS Roebel cable**” *Physica C: Superconductivity*, 471, Issues 1-2, , Pp. 42-4, (2011)
- Z. Jiang, K P Thakur, M. Staines, R A Badcock, N J Long, R G Buckley, N. Amemiya and A D Caplin, **The dependence of AC loss characteristics on the space between strands in a nine strands YBCO Roebel cables**, *Supercond. Sci. Technol.* 24, 065005 (2011)
- K. P. Thakur, M. P. Staines, L. S. Lakshmi, and N. J. Long, **Numerical Computation of AC Losses and Flux Profiles in High-Aspect-Ratio Superconducting Strips in Perpendicular AC Magnetic Field**. *IEEE Transactions on Applied Superconductivity*, 19(6): 3770-3778 (2009).
- K. P Thakur, R.A. Badcock, N.J. Long, and K.A. Hamilton, **Analysis of Remnant Field Detected by Hall Sensors above Superconductor Tape** *IEEE Sensors*, pp. 244-247 (2009).