

# SICE 北陸支部 講演会

2007 年度 第2回 DSC Seminar -Dynamical System and Control -

## Researches on Magnetics at Massey University, New Zealand. MB as an Integrated Platform of Research and Teaching and sensors for elder-care



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**講演日時 : 2007/10/4 (Thu.) 16:00—17:00 (2A516)**

### **Abstract:**

In repulsive type magnetic bearing system usually the rotor is levitated by the repulsive forces between stator and rotor permanent magnets. The system is unstable in nature. The controlled electromagnet is used to keep the rotor in the desired position. The repulsive magnetic bearing system has the advantages of using a smaller number of electromagnets and simplified control scheme compared to active magnetic bearing system. The advantages of using magnetic bearing system compared to mechanical bearing in high speed motors are long life, frictionless and lubrication free operation, feasible operation at high speed etc. The satisfactory performance of this type magnetic bearing is strongly dependent on the characteristics of the permanent magnet and its configuration in the bearing system. A novel arrangement of permanent magnet to fabricate MB will be described. A few fabricated MBs and their characteristics will be reported. The issues related to sensorsless control are investigated. The seminar will describe the different components of a hybrid magnetic bearing model which is used as an integrated platform for research and teaching. The main purpose is to employ the research problem to encourage the students to utilise their knowledge learnt through the lecture to solve a complex engineering problem. The magnetic bearing as an integrated platform provides an environment for innovation, verification of their acquired knowledge, application of their design skills and a common link among many subjects in their curriculum. Selective Activity Monitoring (SAM) is an electronic system designed to support people who wish to live alone but, because of age, a health problem or disability, there is some risk in this which worries their family or friends. S.A.M offers such people an unobtrusive safety net which monitors the activity of appliances throughout the house and contacts family members or close friends upon unusual activity. The system is completely customizable, allowing the user to select which appliances to monitor and exactly what is classified as unusual behaviour.

### **About the Speaker:**

Dr. Subhas Chandra Mukhopadhyay currently works as an Associate professor in the Institute of Information Sciences and Technology, Massey University, New Zealand. His fields of interest include Electromagnetics, sensing technology, control, electrical machines and numerical field calculation etc.

He has published 180 papers in different international journals and conferences, written a book and a book chapter and edited six conference proceedings. He has edited a special issue on Intelligent sensors for the IEEE Sensors journal published in June 2007.

He is a Fellow of IEE(UK), a Senior member of IEEE(USA), an associate editor of IEEE Sensors journal. He is also an Associated editor for Journal of Sensors, Hindawi publications. He is in the editorial board of e-Journal on Non-Destructive Testing, Sensors and Transducers, Transactions on Systems, Signals and Devices (TSSD). He is in the technical programme committee of IEEE Sensors conference, IEEE IMTC conference and IEEE DELTA conference. He was the Technical Programme Chair of ICARA 2004 and ICARA 2006. He was the General chair of ICST 2005. He is organizing the ICST 2007 ([icst.massey.ac.nz](http://icst.massey.ac.nz)) as the General chair during November 26-28, 2007 and the CIRAS 2007 ([ciras.massey.ac.nz](http://ciras.massey.ac.nz)) as the Technical Programme Co-Chair during November 28-30, 2007 at Palmerston North, New Zealand.



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