Department of Automatic Control & Systems Engineering
would like to announce the following seminar:

# *Relative Position Estimation and Control for Precise Formation Flying about the Sun-Earth/Moon L2 Libration Point*


## *Speaker:* Professor May-Win Thein
## University of New Hampshire, USA


## Wednesday 28 March 2007
## at 14:10

## Location: St Georges Mappin Building LT2

Tea and Biscuits will be served afterwards.


ABSTRACT

The purpose of this work is to develop an algorithm to estimate the relative position of two spacecraft orbiting about the Sun-Earth/Moon L2 Libration point. A sliding mode observer has a simple structure and is computationally less expensive than other noted estimation techniques. It is applied to a test mission simulation in conjunction with a passivity-based adaptive controller. The test mission, formerly NASA's Constellation X, mimics a two spacecraft formation flying mission scenario. The two spacecraft are precisely controlled to maintain a separation distance of 50 meters in orbit about the Sun Earth/Moon L2 libration point with submillimeter accuracy. The sliding mode observer is implemented using measurements from a vision-based navigation system. The resulting observer-based control system is shown to be robust against uncertainties and perturbations and shows reasonable performance under measurement noise.