

## LSGI Distinguished Lecture Series

# “MEMS IMU and GNSS Integration for Positioning and Navigation System”

### Overview

It was our pleasure to invite Professor Xiufeng He 何秀凤教授, Director of Institute of Satellite Navigation & Spatial Information System, Hohai University, to deliver a seminar of the LSGI Distinguished Lecture Series on 27 Feb 2019.



### Biography

Prof. Xiu Feng He received the B.Eng. and M.S. degrees in control and navigation from Nanjing University of Aeronautics and Astronautics, China, in 1986 and 1989 respectively, and Ph.D. degree in survey engineering from Hong Kong Polytechnics University in 1998. In the period of 1998-1999 she was a Postdoctoral Fellow at Norwegian University of Science and Technology in Norway where she was working in guidance, navigation and control. She worked at GPS Center, Nanyang Technological University, Singapore, in 2000 as a Research Fellow.

Since 2001, she has been with the School of Earth Science and Engineering, Hohai University, where she is currently a Full Professor and director at Institute of Satellite Navigation and Spatial Information System of Hohai University. Her research interests include satellite geodesy, deformation monitoring, InSAR and multi-source data fusion, and integrated navigation using GNSS and IMU. Dr. He has published three books and over 200 referred papers.

## MEMS IMU and GNSS Integration for Positioning and Navigation System 微惯性/GNSS 组合导航系统及应用

The combination of GNSS receiver and a low-cost inertial measurement unit (IMU) provides an attractive navigation solution for use in land and marine vehicles, aircraft. In an integrated GNSS/IMU, the variances of the dynamics noise and measurement noise are not known accurately, and the parameters in the dynamic model and observation equations may be uncertain due to changes in environmental conditions. The extended interval Kalman filter (EIKF) is proposed for an integrated GNSS/IMU with uncertain model parameters, and it can provide upper and lower bounds of navigation errors. Moreover, the minimax robust Kalman filter is developed for an integrated GNSS/IMU with uncertain noise, which performs better than the standard Kalman filter.