

LSGI Distinguished Lecture Series

“Time-Variable Gravity Field Modelling based on Future Multiple Pair Low-low Satellite Missions”

Overview

It was our pleasure to invite Professor Yunzhong Shen 沈云中教授, Tongji University, to deliver a seminar of the LSGI Distinguished Lecture Series on 22 Feb 2019.



Biography

沈云中现任同济大学教授、博士生导师，国务院学位委员会测绘科学与技术学科评议组成员，大地测量专业委员会委员，《测绘学报》编委，教育部中国大陆构造环境监测网络联合研究中心同济大学分中心主任。曾任同济大学测量与国土信息工程系副主任、主任。沈云中教授的主要研究方向为测量数据处理理论、应用卫星跟踪数据精化地球重力场、GPS 的应用。特别在大地测量逆问题中病态方程的解法、时间系列测量数据的滤波处理作出重要贡献。近年来，沈云中教授在卫星重力场估计方面，提出了新的短弧求解算法，提高了全球重力场估计的精度和分辨率。

Time-Variable Gravity Field Modelling based on Future Multiple Pair Low-low Satellite Missions

The GRACE Follow-On (GFO) satellite pair was launched in May 2018 to continue mapping the Earth's surface mass transportation. However, both GRACE and GFO are not sufficient for detecting surface mass variation in a small basin with weekly or daily temporal resolution. The Next Generation Gravity Mission (NGGM), which includes both polar and inclined pairs of gravity satellites, is now in planning. During period of GFO in orbit the Chinese gravity satellite and Tian Qing II are also probably launched. This presentation investigates the time-variable gravity field modelling using two and triple pairs of gravity satellites via full-scale simulations based on the updated ESA Earth system model with two schemes, the one is based on the NGGM's orbit parameter and payload accuracy by adding a third inclined pair, the another one uses the same payload accuracy and orbit parameters as GFO but different orbit inclination. The results demonstrate that the gravity field solution will be significantly improved in both schemes and will be further improved by using Wiese's approach via the co-estimation of low d/o coefficients.