

Liu Bie Ju Centre for Mathematical Sciences
City University of Hong Kong

**Mathematical Analysis and its Applications
Colloquium**

**Numerical Model and Modeling of Ocean
Circulation, Ecosystem and Climate Trends in the
South China Sea and Hong Kong Waters**

by

Professor Jianping Gan

The Hong Kong University of Science and Technology

Date : 7 December, 2017 (Thursday)

Time : 4:30 pm to 5:30 pm

Venue : Room B6605

Blue Zone, Level 6, Academic 1 (AC1)

City University of Hong Kong

ABSTRACT:

Earth is an Ocean World with 71% of its surface covered by ocean. Broad South China Sea (SCS) is located to the south off Hong Kong. It has a deep, central basin surrounded by a steep continental slope and links to the western Pacific Ocean via Luzon Strait, to the Java Sea via Karimata Strait, to the East China Sea via Taiwan Strait, and to the Sulu Sea via Mindoro Strait. The Hong Kong waters is part of the SCS, and it connects with SCS basin via continental shelf and with Pearl River by a large estuary. Understanding of the three-dimensional circulation in the SCS is crucial to the transports of water masses, energy, and ecosystem and climate variability in the Southeast Asia.

Combined with the spatiotemporally limited field measurements, we utilized primitive Navier-Stokes equation dynamics, and physically and numerically sensible algorithms to develop a novel China Sea Multi-Scale Ocean Modeling System (CMOMS) in HKUST. Based on the CMOMS, we have unveiled many critical but largely unknown physical and associated biogeochemical processes in the SCS as well as in Hong Kong waters. Besides addressing physics and mathematics in numerical ocean modeling, this talk will derive the concerned problems/solutions about ocean circulation, ecosystem and marine environment in the SCS and in the Hong Kong waters from the numerical ocean modeling. By taking advantage of the numerical ocean model, we will provide the trends of biophysical properties in our concerned oceans in response to climate change in the next 100 years.

Light refreshments will be provided before the colloquium from 4:00 pm to 4:30 pm. Please come and join us!

**** All interested are welcome ****



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