

MINI-WORKSHOP ON SEVERAL COMPLEX VARIABLES

February 24, 2012 (Friday)
Room 210, Run Run Shaw Building, HKU

Abstracts

Dr. Feng Rong

The Briot-Bouquet systems and the center families for holomorphic differential equations

"Center" is an important type of singularity in dynamical systems. For holomorphic differential equations, the existence of (isochronous) center families depends largely on the eigenvalues of the linear part. One way to study this problem is by translating it into the so-called "Briot-Bouquet systems" on the phase space. In this talk, we will first introduce briefly the background and then describe in somewhat details the program in dimension three.

Dr. Sui-Chung Ng

Proper holomorphic mappings among $SU(p,q)$ -type flag domains on Grassmannians

In this talk, we will look at certain open orbits of the action of $SU(p, q)$ on complex Grassmannians. The orbits (flag domains) that interest us are those containing complex subgrassmannians. We will discuss how the existence of these subgrassmannians can lead to rigidity of proper holomorphic mappings among these domains. There are both local and global results. The local results are more relevant to Cauchy-Riemann geometry, while the global results are more algebro-geometric in nature.

Dr. Jyh-Haur Teh

Harvey-Lawson's sparks and Deligne cohomology

Cheeger-Simons' differential characters are applied in many areas of mathematics and physics. To unify different approaches to differential characters, Harvey and Lawson introduced the theory of spark complexes. This homological machinery is then used to define $\bar{\partial}$ sparks which is a complex analogue of differential characters. Deligne cohomology can be realized as a subring of the ring of $\bar{\partial}$ sparks. I will give a brief introduction to this theory and give a construction of Chern classes in Deligne cohomology through Harvey-Lawson's $\bar{\partial}$ sparks.