

Speaker: **Stephen S.T. Yau**
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Wednesday, April 20, 2011
4:15 pm
117 Hayes-Healy Hall

Title: Pickrell's $P(\phi)_2$ quantum field theory II

Abstract:

We introduce some new invariants for complex manifolds. These invariants measure in some sense how far away for the complex manifold to have global complex coordinates. For applications, we introduce two new invariants $f^{(1,1)}$ and $g^{(1,1)}$ for isolated surface singularities. We show that $f^{(1,1)}$ is at least one if the singularity admits a C^* -action. We also prove $f^{(1,1)} = g^{(1,1)} = 1$ for rational double points and cyclic quotient singularities.

Let X be a compact connected strongly pseudoconvex CR manifold of real dimension $2n - 1$ in C^N . It has been an interesting question to find an intrinsic smoothness criteria for the complex Plateau problem. For $n > 2$ and $N = n + 1$, we found a necessary and sufficient condition for the interior regularity of the HarveyLawson solution to the complex Plateau problem by means of KohnRossi cohomology groups on X in 1981. For $n = 2$ and $N > n + 1$, the problem has been open for over 30 years. we introduce a new CR invariant $g^{(1,1)}(X)$ of X . The vanishing of this invariant will give the interior regularity of the HarveyLawson solution up to normalization. In case $n = 2$ and $N = 3$, the vanishing of this invariant is enough to give the interior regularity.