

SAN JOSÉ STATE UNIVERSITY

DEPARTMENT OF MATHEMATICS

*Colloquium Series*

PRESENTS

**Lek-Heng Lim**

**University of California, Berkeley**

*Hyperdeterminants, secant varieties, and tensor approximations*

APRIL 23, 2008, MH 320

**Abstract:** Whereas the Eckart-Young theorem for matrices gives a conclusive answer to the problem of finding a best low-rank approximation to a given matrix, there is no analogous theorem for tensors/hypermatrices of higher order. Indeed the problem turns out to be ill-posed in essentially all non-trivial cases, because of the failure of tensor rank to be upper-semicontinuous. In this talk we will dissect the somewhat unexpected structure of the rank function for real  $2 \times 2 \times 2$  hypermatrices. The Cayley hyperdeterminant is our chosen scalpel.

This is joint work with Vin de Silva.

SNACKS IN MH 331B AT 2:30 PM

TALK STARTS AT 3 PM