

THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

will present a seminar entitled

Statistical Analysis of Stellar Evolution

by

Professor David A. van Dyk

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Department of Statistics, University of California, Irvine**

on

**Tuesday, 16 March 2010
2:00pm – 3:00pm**

in

**Lady Shaw Building LT6
The Chinese University of Hong Kong**

Abstract:

Color-Magnitude Diagrams (CMDs) are plots that compare the magnitudes (luminosities) of stars in different wavelengths of light (colors). High non-linear correlations among the mass, color and surface temperature of newly formed stars induce a long narrow curved point cloud in a CMD known as the main sequence. Aging stars form new CMD groups of red giants and white dwarfs. The physical processes that govern this evolution can be described with mathematical models and explored using complex computer models. These calculations are designed to predict the plotted magnitudes as a function of parameters of scientific interest such as stellar age, mass, and metallicity. Here, we describe how we use the computer models as a component of a complex likelihood function in a Bayesian analysis that requires sophisticated computing, corrects for contamination of the data by field stars, accounts for complications caused by unresolved binary- star systems, and aims to compare competing physics-based computer models of stellar evolution.

(Joint work with Steven DeGennaro, Nathan Stein, William H. Jefferys, Ted von Hippel, and Elizabeth Jeffery.)

All are Welcome