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STATISTICS COLLOQUIUM

MONDAY, APRIL 20, 2015

TALK: 4:15 PM — SCIENCE CENTER RM. 705

RECEPTION: 3:50 PM — SCIENCE CENTER, 7TH FLOOR

“Energy Statistics (E-statistics) and Distance Correlation”

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ABSTRACT

Newton’s gravitational potential energy is generalized for statistical applications. The resulting Energy statistics or E-statistics are functions of distances between statistical observations in metric spaces.

Thus even if the observations are complex objects, like functions or graphs, we can use their distances for inferences. Examples include testing for normality, energy clustering, DISCO (a nonparametric version of ANOVA), and distance correlation.

Applications include prostate cancer predictions, disease clustering, and the psychology of closeness / affection when applied to dissimilarities. Partial distance correlation has important applications in financial time series.