

STATISTICS COLLOQUIUM

THURSDAY, DECEMBER 5, 2013

TALK: 2:30 PM — SCIENCE CENTER RM. 705

RECEPTION: 3:45 PM — SCIENCE CENTER, 7TH FLOOR

“A Bayesian Perspective on Unreplicated Factorial Experiments Using Potential Outcomes”

**Valeria Espinosa
Department of Statistics
Harvard University**

Advisors: Tirthankar Dasgupta and Donald Rubin

ABSTRACT

Factorial designs have been widely used in many scientific and industrial settings, where it is important to distinguish “active” or real factorial effects from “inactive” or noise factorial effects used to estimate residual or “error” terms. We propose a new approach to screen for active factorial effects from such experiments that utilizes the potential outcomes framework and is based on sequential posterior predictive model checks. One advantage of the proposed method lies in its ability to broaden the standard definition of active effects and to link their definition to the population of interest. Another important aspect of this approach is its conceptual connection to Fisherian randomization tests. Extensive simulation studies are conducted, which demonstrate the superiority of the proposed approach over existing ones.

.