

STATISTICS COLLOQUIUM

MONDAY, FEBRUARY 25, 2013

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

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

“Association Studies with Functional Phenotypes”

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ABSTRACT

In this talk I will discuss the application of functional data methods, FDA, to genome wide association studies with longitudinal response variables. Such data can be difficult to analyze due to the heterogeneity of the observations; subjects may evolve in intricate ways as they age or are administered various treatments. An FDA framework allows for very flexible models, while still exploiting the temporal structure of the data in powerful ways. However, such methods must be applied with care as subjects are often observed at a relatively small number of common time points, while most FDA methods are intended for high frequency data or sparse data whose pooled time points are dense in the time domain. After introducing the FDA perspective and some basic methodology, we will present an association test which differs from established FDA methods in that it does not directly depend on principal component analysis. We illustrate these ideas via simulations and by exploring data coming from the childhood asthma management program, CAMP.