

**MICHIGAN STATE UNIVERSITY**  
Department of Statistics and Probability

## COLLOQUIUM

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### **Predicting functional time series**

Tuesday, Dec 1, 2015  
10:20 a.m. - 11:10 am  
Refreshments 10:00 am  
C405 Wells Hall

#### **Abstract**

In this talk I will address the prediction of stationary functional time series. Existing contributions to this problem have largely focused on the special case of first-order functional autoregressive processes because of their technical tractability and the current lack of advanced functional time series methodology. It is shown here how standard multivariate prediction techniques can be utilized in this context. The connection between functional and multivariate predictions is made precise for the important case of vector and functional autoregressions. The proposed method is easy to implement, making use of existing statistical software packages, and may therefore be attractive to a broader, possibly non-academic, audience. Its practical applicability is enhanced through the introduction of a novel functional final prediction error model selection criterion that allows for an automatic determination of the lag structure and the dimensionality of the model. The usefulness of the proposed methodology is demonstrated in a simulation study and an application to environmental data, namely the prediction of daily pollution curves describing the concentration of particulate matter in ambient air. It is found that the proposed prediction method often significantly outperforms existing methods.

The talk is based on joint work with Diogo Dubart Norinho (London) and Siegfried Hörmann (Brussels).

*To request an interpreter or other accommodations for people with disabilities, please call the Department of Statistics and Probability at 517-355-9589.*