1138-92-361 **Aurelie A Akossi*** (aakossi1@gsu.edu), Room 1337, 25 Park Place, Atlanta, GA 30303, and **Gerardo Chowell** and **Alexandra Smirnova**. *On Stable Estimation of Time Dependent Transmission Rate in an SEIR System and Implications for Forecasting.* Preliminary report.

The estimation of disease parameters and the design of adequate disease-forecasting systems are thematic issues in epidemiology. Public health officials and government agencies need reliable quantification of transmission pathways in order to accurately predict, and effectively respond to epidemic outbreaks. Compartmental models describe the dynamic progression of individuals between epidemiological classes. Within SEIR models, the transmission rate is an especially important parameter. It can be defined as the effective contact rate, that is, the probability of infection given contact between an infectious and susceptible individual multiplied by the average rate of contacts between these groups. Our goal is to recover the time dependent transmission rate by assuming specific functional forms that depend on a few parameters. Specifically, we compare three model transmission-rate functions with limited number of parameters in terms of their ability to fit incidence data and to provide accurate short term forecasting. Given noise contaminated epidemiological data, the inverse problem involves minimization with respect to model function parameters and results in a non-linear least squares problem. Numerical simulations with synthetic and real incident case data will be presented. (Received February 13, 2018)