1109-92-241 **James M Hyman*** (mhyman@tulane.edu). *Hybrid Multiscale Models for Forecasting and Mitigating an Outbreak of the Ebola Virus Disease.* Preliminary report.

We describe a mathematical model for the recent West African Ebola virus disease (EVD) epidemic that can be used to quantify the impact of mitigations on epidemic severity. While many infectious disease epidemics are initially characterized by an exponential growth in time, we observed that the district-level EVD outbreaks in West Africa follow slower polynomial-based growth kinetics over several generations of the disease. To better understand these unusual epidemic transmission patterns, our model combines a branching process for disease progression, a network diffusion model for the spatial spread, and two types of mitigation to assimilate county-level weekly incidence data and make predictions for the course of the epidemic. We model the disease progression (infection status, contact patterns, treatment) in each infected person with an agent-based. The communities of people in contact with the infected individual are modeled by a continuum group of people associated with the infected population. The slower than expected growth pattern of local EVD outbreaks could result from behavior changes, success of control interventions, or intrinsic features of the disease such as a high level of clustering. (Received February 02, 2015)