

1098-60-55

**Konstantinos Spiliopoulos\*** (kspiliop@math.bu.edu), Department of Mathematics and Statistics, Boston University, Boston, MA 02215. *Systemic risk in large financial networks.*

The past several years have made clear the need to better understand the behavior of risk in large interconnected financial networks. Interconnections often make a system robust, but they can act as conduits for risk. In this talk, I will present recent results on modeling the dynamics of correlated default events in the financial market. An empirically motivated system of interacting point processes is introduced and we study how different types of risk, like contagion and exposure to systematic risk, compete and interact in large-scale systems. A law of large numbers for the loss from default is proven and used for approximating the distribution of the loss from default in large, potentially heterogeneous portfolios. Fluctuation analysis and conditional Gaussian approximations are used to improve the approximations. Finally large deviations theory is developed to approximate probabilities of large losses and the most likely path to failure in large portfolios. Numerical results illustrate the accuracy of the approximation. The results give insights into how different sources of default correlation interact to generate typical and atypical portfolio losses. (Received January 02, 2014)