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Nancy Rodriguez* (nrod@unc.edu), **Henri Beretycki** and **Jean-Pierre Nadal**. *A model of riots dynamics: shocks, diffusion and thresholds.*

The need to understand how protests or riots are initiated and how they spread has been highlighted by many current events. A great example being the recent Ferguson, Missouri riots. In this talk I will introduce and analyze several variants of a system of differential equations which model the dynamics of social outbursts, such as riots. The systems involve the coupling of an explicit variable representing the intensity of rioting activity and an underlying (implicit) field of social tension. These models include the effects of exogenous and endogenous factors as well as various propagation mechanisms. From numerical and mathematical analysis of these models we show that the assumptions made on how different locations influence one another and how the tension in the system disperses play a major role on the qualitative behavior of bursts of social unrest. I analyze here various properties of these systems, such as the existence of traveling wave solutions and the effect of some heterogeneous environments. (Received January 15, 2015)