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Laura M. Smith* (lsmith@math.ucla.edu), UCLA Mathematics Department, Box 951555, Los Angeles, CA 90095-1555. *An Agent-Based Approach to Modeling Gang Rivalries*. Preliminary report.

We propose an interacting particle model to simulate the creation of gang rivalries in the Hollenbeck policing district of eastern Los Angeles. Our model integrates data from the Los Angeles Police Department, geographic information, and behavioral dynamics suggested by the LAPD and the criminology community. The movement dynamics of agents are coupled to an evolving complex network of gang rivalries, which is determined by previous interactions among agents in the system. The knowledge of major highways, the Los Angeles River, and the locations of gangs' centers of activity influences the agents' motion. The number of agents in each gang reflects historical information from the LAPD. We use common metrics from graph theory to compare networks produced by our simulations to the network existing in the criminology literature. (Received August 11, 2010)