1154-91-2452 **Daewa Kim*** (daewa.kim@mail.wvu.edu), 332 Bent Tree Court, APT 328, Morgantown, WV 26505, and **Annalisa Quaini**. *A Kinetic Theory Approach to Pedestrian Motion and Onset of Disease Spreading.* Preliminary report.

We present a kinetic approach for crowd dynamics. First, we model the crowd evacuation from bounded domains. The interactions of a person with other pedestrians and the environment, which includes walls, exits, and obstacles, are modeled by using tools of game theory and are transferred to the crowd dynamics. The model allows to weight between two competing behaviors: the search for less congested areas and the tendency to follow the stream unconsciously in a panic situation. For the numerical approximation of the solution to our model, we apply an operator splitting scheme which breaks the problem into two pure advection problems and a problem involving the interactions. Through a series of numerical tests, we also show that our approach is capable of handling evacuation from a room with one or more exits with variable size, with and without obstacles, and can reproduce lane formation in bidirectional flow in a corridor. Next, we consider a crowd model known as ASCRIBE that can track the level of emotional contagion in evacuation scenarios. We propose a modification of this model to track disease contagion. Finally, we couple the disease contagion model with the one-dimension kinetic approach for pedestrian dynamics to simulate the initial spreading of an infectious disease. (Received September 17, 2019)