1116-VM-2904 **Michelle L Isenhour*** (michelle.isenhour@usma.edu), United States Military Academy, West Point, NY 10996, and **Rainald Löhner** (rlohner@gmu.edu), Center for Computational Fluid Dynamics, George Mason University, Fairfax, VA 22030. *Pedestrian Speed on Stairs: A Mathematical Model Based on Empirical Analysis for use in Computer Simulations.* Preliminary report.

A critical component of building evacuation simulations is pedestrian ascent and descent on stairs. Several researchers have conducted controlled laboratory experiments and performed observational studies in an effort to obtain empirical data and develop models that can be used to accurately predict the walking speed of pedestrians on stairs. Most recently, Qu et al. (2014) compiled an extremely thorough state-of-the-art summary of past experimental and observational data collection efforts, highlighting the studies of flow characteristics and evacuation processes. The availability and use of empirical data is essential to the calibration and validation of mathematical models used in computer simulations of pedestrian movement. This paper will describe the mathematical model used in our simulation code's subroutine (PEDFLOW) which adjusts a simulated pedestrian's velocity to account for movement on stairs. In addition, the paper will demonstrate how empirical data was used to determine individual step frequency on stairs, how the model was verified within PEDFLOW, and how the model performed against a newly collected set of empirical data. (Received September 23, 2015)