1135-60-22 **Barbara H Margolius*** (`b.margolius@csuohio.edu`), Cleveland State University, Department of Mathematics, Cleveland, OH 44114, and **L Felipe Martins**. *Random Walks in the Quarter Plane with Time-Varying Periodic Transition Rates.* Preliminary report.

Many processes vary periodically with time. Some examples include: the dispersal of wildlife in its habitat, the boundary of snow coverage, the level of water in the Great Lakes, the amount of a pollutant in the air, the volume of calls to a call center, the emergency service demands, and many, many others. In this talk, we consider a random walk which travels on a lattice in the quarter plane. We consider general time-varying transition rates and also those rates which vary periodically with time. We obtain the transient distribution for the location of the walk in the plane at time t. When rates are periodic and the system is ergodic, we obtain an asymptotic (in time) periodic distribution for the location in the plane. We show that under certain conditions, the distribution is asymptotically geometric (in the distance from the origin) and provide numerical examples. (Received June 19, 2017)