1154-92-1479 **Aijun Zhang*** (zhangai@tigermail.auburn.edu), Department of Mathematics, 205 Maxim Doucet Hall, University of Louisiana at Lafayette, Lafayette, LA 70504, and **Erik S. Van Vleck**.

Transition Fronts of Monostable Lattice Differential Equations in Locally Spatially Inhomogeneous Patchy Environments: Existence and Non-Existence.

Front propagation occurs in many applied fields such as population dispersals in biology, combustion in chemistry, neuronal waves in neuroscience, fluid dynamics in physics and more. This talk is devoted to the study of spatial propagation dynamics of species in locally spatially inhomogeneous patchy environments or media. For a lattice differential equation with monostable nonlinearity in a discrete homogeneous media, it is well-known that there exists a minimal wave speed such that a traveling front exists if and only if the wave speed is not slower than this minimal wave speed. We shall show that strongly localized spatial inhomogeneous patchy environments may prevent the existence of transition fronts (generalized traveling fronts). Transition fronts may exist in weakly localized spatial inhomogeneous patchy environments but only in a finite range of speeds, which implies that it is plausible to obtain a maximal wave speed of existence of transition fronts. (Received September 15, 2019)