1145-37-1143 **Simone Evans*** (evanss3@hawkmail.newpaltz.edu), 1 Hawk Dr., Department of Mathematics, New Paltz, NY 12561, and **Anca Radulescu**. *Universality of the configuration-dynamics relationship in nonlinear networks.*

We study how architecture affects dynamics in nonlinear networks. First, we discuss our results from coupled quadratic nodes. While single-map complex quadratic iterations have been studied over the past century, considering ensembles of such functions, organized as coupled nodes in a network, generates new questions with potentially interesting applications to the life sciences. We discuss extensions of concepts like escape radius and Julia and Mandelbrot sets (as parameter loci in $\mathbb{C}^n$, where n is the size of the network).

We then review ongoing research on two other nonlinear network models from neuroscience: threshold-linear networks and a reduced model of spiking inhibitory networks. Threshold-linear networks are networks that consist of simple, perceptron-like neurons with continuous-time dynamics. The inhibitory clusters model captures spiking activity and neuron synchronization in an all-to-all network of reduced Hodgkin-Huxley neurons. For each of these models, we seek out graph properties which can be used to predict or classify dynamics. Finally, we search for graph properties which are robust within each model, but that also translate between the three models. (Received September 19, 2018)