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Chimera states in 1 and 2 dimensions in a 5th order FitzHugh-Nagumo model ANDREA WELSH, FLAVIO FENTON, Georgia Institute of Technology — The FitzHugh-Nagumo model is a simple, two variables model used as a quantitative description of the dynamical behavior of an excitable neuron and of other excitable systems. This model uses one variable to mimic the membrane potential and a second variable for recovery of excitability and has become a central example in reaction-diffusion systems. Typical solutions for this model are stable oscillations or excitations depending on parameters. By converting the 3rd order reaction term to a 5th order, we are able to induce oscillations or excitation states depending only on initial conditions. In this talk we present first results of this new system with chimera states, the coexistence of coherence and incoherence which are already studied in coupled oscillator systems, in one dimensional cables and rings, and in two dimensional grids representing tissues.

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