1115-34-14 **Stuart P Hastings***, sph@pitt.edu. *Existence of Traveling Pulses in a Neural Model including Synaptic Depression.*

In 1992 G. B. Ermentrout and J. B. McLeod published a landmark study of traveling wavefronts for a differential-integral equation model of a neural network. Since then a number of authors have extended the model by adding an additional equation for a "recovery variable", thus allowing the possibility of travelling pulse type solutions. In a recent paper G. Faye gave perhaps the first rigorous proof of the existence (and stability) of a traveling pulse solution for such a model. The excitatory weight function used in this work allowed the system to be reduced to a set of four coupled ODEs, and a specific firing rate function, with parameters, was considered. The method of geometric singular perturbation was employed, together with blow-ups. In this paper we extend Faye's results on existence by dropping one of his key hypotheses, proving the existence of pulses at at least two different speeds, and in a sense, allowing a wider range of the small parameter in the problem. The proofs are classical, and self-contained aside from standard ode material. (Received July 13, 2015)