1014-92-1638 **Alla Borisyuk*** (borisyuk@math.utah.edu), 155 South 1400 East, Room 233, Salt Lake City, UT 84112. *The dynamic range of bursting in a network of respiratory pacemaker cells.*

A network of excitatory neurons within the pre-Bötzinger complex of the mammalian brainstem has been found experimentally to generate robust, synchronzied population bursts of activity. We consider a two-cell reduction of an earlier experimentally-calibrated model to demonstrate that, over a broad range of synaptic coupling strengths, the network can support two qualitatively distinct forms of bursting, as well as two distinct forms of tonic spiking. Understanding the dynamical mechanisms responsible for these different activity modes, allows us to uncover the importance of spike asynchrony, to explain the changes in burst duration and interburst intervals and an enhancement in the parameter range over which bursting occurs. (Received September 28, 2005)