1020-57-150 **Irma Cruz-White** (cruz-whitei@chipola.edu), Department of Mathematics, Chipola College, Marianna, FL 32446-2053, and **De Witt Sumners*** (sumners@math.fsu.edu), Department of Mathematics, Florida State University, Tallahassee, FL 32306-4510. *Spiral Waves in Excitable Media.*

Rotating spiral wave patterns are a signature of oscillating chemical reactions (the Belusov-Zhabotinsky reaction, and AMP pulses in slime mold), and are believed to be involved in heart fibrillation and neural siezures. The organizing centers for spiral wave patterns are points in 2-dimensional media, and curves in 3-dimensional media, so codimension 2 topology (knot theory) is useful in the analysis of these patterns. This talk will discuss a mathematical characterization of these spiral wave patterns and their time evolution, in terms of phase maps and the homotopy of phase maps. A quantization condition that is necessary and sufficient for the (mathematical) existence of a rotating spiral wave pattern will be derived. (Received August 25, 2006)