Meeting: 1001, Evanston, Illinois, SS 7A, Special Session on Geometric Partial Differential Equations

1001-35-225 **Gieri Simonett*** (simonett@math.vanderbilt.edu), Vanderbilt University, Department of Mathematics, 1326 Stevenson Center, Nashville, TN 37240. *Motion of Surfaces by Curvature.*

Several geometric evolution laws that describe the motion of curves and surfaces driven by curvature will be introduced. In the examples considered, surfaces will evolve in such a way as to minimize certain geometric quantities (surface area, total curvature). I will discuss questions related to the existence and uniqueness of solutions and their geometric properties.

Numerical simulations will be provided, showing that some surfaces will smoothly evolve into spheres (thereby reaching a final destination), while others may develop singularities. Many questions raised by the numerical simulations are wide open and still await a rigorous mathematical treatment. (Received August 27, 2004)