1019-35-30 **Xiaofeng Ren*** (`ren@math.usu.edu`), Dept. of Math. Stat., Logan, UT 84322, and **Juncheng Wei**, Dept. of Math., Hong Kong, Peoples Rep of China. *An Allen-Chan type problem with curvature modification.*

It is known that the Allen-Cahn equation with Neumann boundary condition has no stable nonconstant solution on any convex domain (Casten-Holland, Matano). Many modifications have been proposed that yield richer structures of solutions. Examples include a chiral liquid crystal film problem (Selinger, Wang, Bruinsma and Knobler) and a bending membrane problem (Seul and Andelman). In this talk I will discuss an Allen-Cahn type problem modified by interface curvature, i.e. one adds the interface curvature to the free energy. Every solution of the original Allen-Cahn problem remains a solution of the new problem. An unstable solution to the old problem becomes stable in the new problem, if the interface curvature part of the free energy is sufficiently large. There also exist solutions to the modified problem that have no counterparts in the original problem. I will show the existence of the so called bubble solutions in this category. (Received July 25, 2006)