

Meeting: 1000, Albuquerque, New Mexico, SS 12A, Special Session on Regularity in PDEs and Harmonic Analysis

1000-35-116 **Marianne Korten** (marianne@math.ksu.edu), Department of Mathematics, Kansas State University, Manhattan, KS 66503, and **Charles Moore*** (cnmoore@math.ksu.edu), Department of Mathematics, Kansas State University, Manhattan, KS 66503. *On the two phase Stefan problem.* Preliminary report.

We consider the two-phase Stefan problem $u_t = \Delta\alpha(u)$, where $\alpha(u) = (u - 1)_+$ for $u \geq 0$, and $\alpha(u) = -((u + 1)_-)$ for $u \leq 0$. Using ideas (of many authors) from the study of nonlinear diffusion equations and the one phase Stefan problem, we show local representation formulas, regularity results and local energy estimates. We discuss the growth at infinity of distributional solutions in L^2_{loc} and the structure of the free boundary. (Received August 20, 2004)