Meeting: 1003, Atlanta, Georgia, SS 9A, AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, I

1003-35-110 **Peter M Luthy*** (`pmlut@conncoll.edu`), Connecticut College Box 4121, New London, CT 06320, and **Alex Meadows**, **Phillip Whitman** and **Frances Hammock**. *Tornado sequences and $\Delta u = u^{-\alpha}$ for $0 < \alpha$.*

"We study solutions of the elliptic nonlinear partial differential equations of the form $\Delta u = u^{-\alpha}$ for $\alpha > 0$ on bounded domains in R^n. In our main result, we demonstrate that solutions in any sequence of positive solutions which stay uniformly bounded away from zero on the boundaries of balls with vanishing radii cannot have interior minima which tend to zero when $\alpha < 1$. This result depends on properties of radially symmetric (weak) solutions to the above equation and the Hopf Maximum Principle. When n=2, the main result implies continuity of solutions which tend to zero on the interior." (Received August 07, 2004)