

ANALYSIS AND DIFFERENTIAL GEOMETRY
COLLOQUIUM

*Symmetry of hypersurfaces with ordered mean curvature in one
direction*

Yanyan Li
Rutgers University

Abstract: For a connected n -dimensional compact smooth hypersurface M without boundary embedded in R^{n+1} , a classical result of A.D. Aleksandrov shows that it must be a sphere if it has constant mean curvature. Nirenberg and I studied a one-directional analog of this result: if every pair of points (x', a) , (x', b) in M with $a < b$ has ordered mean curvature $H(x', b) \leq H(x', a)$, then M is symmetric about some hyperplane $x_{n+1} = c$ under some additional conditions.

Our proof was done by the moving plane method and some variations of the Hopf Lemma. In a recent joint work with Xukai Yan and Yao Yao, we have obtained the symmetry of M under some weaker assumptions using a variational argument, giving a positive answer to a conjecture raised by Nirenberg and I in 2006.

Wednesday, February 26, 2020, 3:00 pm
PAIS 220

MATHEMATICS
EMORY UNIVERSITY