NONLINEAR PROBLEMS IN GEOMETRY

October 19, 2017, 9:00 am - 2:30 pm

Science Center, Room 4102

Graduate Center, CUNY

Schedule:

- 9 am - 9:50 am: Breakfast
- 9:50 am - 10:40 am: Joel Spruck
- 10:40 am - 10:50 am: Coffee
- 10:50 am - 11:40 am: Bo Guan
- 11:40 pm - 12:40 pm: Lunch break
- 12:40 pm - 1:30 pm: Davi Maximo
- 1:30 pm - 1:40 pm: More Coffee
- 1:40 pm - 2:30 pm: Xin Zhou

Title and Abstract:

1. Joel Spruck:

Title: Complete translating solitons to the mean curvature flow in $\mathbb{R}^3$ with nonnegative mean curvature

Abstract: We prove that any complete immersed two sided mean convex translating soliton $\Sigma \subset \mathbb{R}^3$ for the mean curvature flow is convex. As a corollary it follows that any entire mean convex graphical translating soliton in $\mathbb{R}^3$ is the axisymmetric ?bowl soliton". We also show that if the mean curvature of Σ tends to zero at infinity, then Σ can be represented as an entire graph and so is the bowl soliton. Finally we classify all locally strictly convex graphical translating solitons defined over strip regions (the only other possibility).This is joint work with Ling Xiao.

2. Bo Guan:

Title: The concavity and subsolution for fully nonlinear elliptic equations

Abstract: In this talk we discuss the roles of concavity and subsolutions in the study of fully nonlinear equations, and report some recent discoveries on how to make use of them to derive second order estimates for equations on manifolds under a minimal set of assumptions. We shall discuss different notions of sub solutions on closed manifolds and show the equivalence between some of the definitions for Type I cones (defined by Caffarelli, Nirenberg and Spruck).

3. Davi Maximo:

Title: On Morse index estimates for minimal surfaces

Abstract:In this talk we will survey some recent estimates involving the Morse index and the topology of minimal surfaces.

4. Xin Zhou:

Title: Min-max theory for constant mean curvature (CMC) hypersurfaces

Abstract: In this talk, I will present constructions of closed CMC hypersurfaces using min-max method. In particular, given any closed Riemannian manifold, I will show the existence of closed CMC hypersurfaces of any prescribed mean curvature. This is a joint work with Jonathan Zhu.

Organizers:

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