Candidate Colloquium

Junping Shi
The College of William & Mary

Thursday, February 28th
Room 220, 60 West Charlton
4:00 – 5:00 pm

Uniqueness of positive solution to some coupled cooperative variational elliptic systems

Systems of nonlinear elliptic type partial differential equations arise from many models in mathematical physics or other mathematical models. While the existence of positive solutions to such elliptic systems has been obtained through various variational or other methods, the uniqueness or exact multiplicity of solutions have been mostly open. We introduce a rather general approach of proving the uniqueness of positive solution to the system in one dimensional space. The key ingredient of the proof is the oscillatory behavior of solutions to linearized equations for cooperative semilinear elliptic systems of two equations, and it is shown that the stability of the positive solutions for such semilinear system is closely related to the oscillatory behavior. We use this general approach to prove the uniqueness of positive solution to two Schrodinger type nonlinear systems. This is a joint work with Yulian An (Shanghai Institute of Technology) and Jann-Long Chern (National Central University).

Refreshments will be served 3:15 – 3:45 pm in the Faculty & Graduate
Student Lounge Room 4118 French Hall West

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