



CLAREMONT CENTER
for MATHEMATICAL SCIENCES

CCMS COLLOQUIUM

SUBSOLUTIONS: A JOURNEY FROM POSITONE
TO INFINITE SEMIPositONE PROBLEMS

by

Ratnasingham Shivaji

University of North Carolina at Greensboro

Abstract:

We discuss the existence of positive solutions to $-\Delta u = \lambda f(u)$ in Ω , with $u = 0$ on the boundary, where λ is a positive parameter, Ω is a bounded domain with smooth boundary, Δ is the Laplacian operator, and $f : (0, \infty) \rightarrow \mathbb{R}$ is a continuous function. We first discuss the cases when $f(0) > 0$ (positone) and $f(0) < 0$ (semipositone). In particular, we will review the existence of non-negative strict subsolutions. Along with these subsolutions and appropriate assumptions on $f(s)$ for $s \gg 1$ (which will lead to large supersolutions) we discuss the existence of positive solutions. Finally, we will discuss the case of infinite semipositone problems ($\lim_{s \rightarrow 0^+} f(s) = -\infty$).

Wednesday, February 13, 2013, at 4:15pm

Beckman B126, Harvey Mudd College

Refreshments at 3:45 p.m. in Harvey Mudd Math Lounge, Olin B161
(around the corner from Beckman B126)

and wine and cheese after the talk in the Math Lounge, Olin B161

*The dinner will be hosted by Prof. Alfonso Castro.
Please contact Prof. Castro if you are interested in attending the dinner*