

Seminario del Departamento de Matemática Aplicada
E.T.S. Arquitectura - U.P.M.

Subsolutions: A Journey from Positone to Infinite Semipositone Problems

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RESUMEN

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 nonnegative 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 ($\lim_{s \rightarrow 0^+} f(s) = -\infty$).

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Lugar: Aula 1N9