

On the solvability of resonance problems with respect to the Fucik Spectrum

Stephen B. Robinson, Pavel Drábek

Department of Mathematics, Wake Forest University, USA

sbr@wfu.edu

We consider the boundary value problem

$$\begin{aligned} -\Delta u &= \alpha u^+ - \beta u^- + g(u) + h \text{ in } \Omega, \\ u &= 0 \text{ on } \partial\Omega, \end{aligned}$$

where Δ is the Laplace operator, (α, β) is in the Fucik Spectrum, $g : \mathbb{R} \rightarrow \mathbb{R}$ is continuous with sublinear growth, $h \in L^2(\Omega)$, and Ω is a bounded domain in \mathbb{R}^n . We prove an existence theorem subject to a Landesman-Lazer type condition on the primitive of g . The proof relies on a variational characterization of the Fucik Spectrum due to Castro.