Positive solutions of an integral equation of Hammerstein type

Mirosława Zima

We will discuss the existence of positive solutions of the perturbed Hammerstein equation

$$u(t) = \alpha[u]\gamma(t) + \int_0^1 k(t,s)f(s,u(s),u'(s),\dots,u^{(m)}(s))\,ds,\ \ t \in [0,1],$$

where α is a compact functional on the space $C^m[0,1]$, the functions $\gamma : [0,1] \to [0,\infty)$ and $k : [0,1]^2 \to [0,\infty)$ are sufficiently regular, and $f : [0,1] \times \mathbb{R}^{m+1} \to [0,\infty)$ is continuous.

Mirosława Zima, University of Rzeszów, Rzeszów, Poland
e-mail : mzima@ur.edu.pl