

Multiplicity of solutions for Robin problems with double resonance

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Abstract. We consider Robin boundary value problems with a reaction exhibiting double resonance at $\pm\infty$ with respect to any nonprincipal spectral interval. We prove several multiplicity theorems, producing nontrivial smooth solutions with sign information. We also prove an exact multiplicity theorem. We employ variational tools from critical point theory, together with truncation-perturbation techniques, flow invariance arguments and Morse theory (critical groups). We produce up to seven nontrivial smooth solutions all with sign information.

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