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# EXISTENCE OF SOLUTIONS FOR A NONHOMOGENEOUS KIRCHHOFF–SCHRÖDINGER TYPE EQUATION IN $\mathbb{R}^2$ INVOLVING UNBOUNDED OR DECAYING POTENTIALS

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Abstract. In this paper, we consider the following nonhomogeneous Kirchhoff–Schrödinger equation:

$$m\Big(\int_{\mathbb{R}^2} |\nabla u|^2\,dx + \int_{\mathbb{R}^2} V(|x|)u^2\,dx\Big)[-\Delta u + V(|x|)u] = Q(|x|)f(u) + \varepsilon h(x),$$

for $x \in \mathbb{R}^2$, where $m$, $V$, $Q$ and $f$ are continuous functions, $\varepsilon$ is a small parameter and $h \neq 0$. When $f$ has exponential growth by means of a Trudinger–Moser type inequality, the Mountain Pass Theorem and Ekeland's Variational Principle in weighted Sobolev spaces are applied in order to establish the existence of at least two weak solutions for this equation.

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