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An elliptic equation with indefinite nonlinearities and exponential critical growth in $\mathbb{R}^2$

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Abstract. In this paper we study the existence, nonexistence and multiplicity of positive solutions for a class of semilinear elliptic problems involving indefinite nonlinearities with exponential critical growth of Trudinger-Moser type. The main hypothesis is that the indefinite term is the product of a weight function, having a thick zero set, and a nonlinear function with exponential critical growth satisfying a version of the Ambrosetti-Rabinowitz superlinear condition. Our proofs rely on a variational approach and sub-supersolution methods.

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