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Kinks in the relativistic model with logarithmic nonlinearity

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We study the properties of a certain class of solutions of a relativistic model with the logarithmic nonlinearity. We show that such a model have two types of solutions: topologically trivial (gaussons) and topologically non-trivial (kinks). For the kink-antikink scattering, we have found a critical value of the initial velocity v_{cr}, which separates two different scenarios of scattering. At the initial velocities $v_{\mathrm{in}} < v_{\mathrm{cr}}$, the kinks form a bound state, which then decays slowly. At $v_{\mathrm{in}} > v_{\mathrm{cr}}$, the kinks collide, bounce and eventually escape to infinities. During this process, the higher initial velocity is, the greater is the elasticity of the collision. We also study excitation spectrum of the kink solution.

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