

Covariant quantum field theory of tachyons

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Three major misconceptions concerning quantized tachyon fields, the energy spectrum unbounded from below, the frame-dependent and unstable vacuum state, and the noncovariant commutation rules, are shown to be a result of misrepresenting the Lorentz group in a too small Hilbert space. By doubling this space we establish an explicitly covariant framework that allows for the proper quantization of the tachyon fields eliminating all of these issues. Our scheme that is derived to maintain the relativistic covariance also singles out the two-state formalism developed by Aharonov et al. [Phys. Rev. 134, B1410 (1964)] as a preferred interpretation of the quantum theory.

Author: DRAGAN, Andrzej

Presenter: DRAGAN, Andrzej