

Abstract Submitted
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Existence and Stability of Relativistic Solitary Waves in Warm Plasmas¹ JULIO HERRRERA-VELÁZQUEZ, MARCO ANTONIO MAZAPALACIOS, Instituto de Ciencias Nucleares, UNAM — A variational method for one dimensional relativistic solitons is established, within the two fluid model framework, including finite temperature effects. Our starting point is a Lagrangian for a two species fluid plasma, which allows the deduction of the conserved quantities of the system by means of Noether's theorem, as well as the model equations. At a first stage, travelling wave solutions are studied with the usual shape of envelope solitary waves. It is found that bounded travelling waves (bright solitons) exist for most velocities, if both ions and electrons are assumed to be relativistic, except for a window at small values of v/c . In order to study their stability, we obtain the evolution equations of the solitary wave parameters.

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Julio Herrera
Instituto de Ciencias Nucleares, UNAM

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