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The effect of a warm electron beam on fast electron-acoustic nonlinear potential structures in multi-electron species plasmas

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Abstract content
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Arbitrary amplitude fast electron-acoustic solitons are studied in a multi-electron component plasma with cool, warm and hot electrons and cool ions treated as inertial (adiabatic) fluids. The warm electrons are treated as drifting relative to other plasma species. Effects of the beam drift speed on the existence regions of fast electron-acoustic solitons and their coexistence are examined. We also investigate the effect of warm electron beam drift speed on the existence of supersolitons. The relevance of our results in connection to the generation mechanism of various electrostatic turbulences such electrostatic hiss, magnetic burst noise, auroral kilometric radiation(AKR), broadband electrostatic noise(BEN) and other nonlinear wave phenomenon is also discussed.

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