Non-stationary characteristic of supercritical perpendicular shock waves in a two-ion-species plasma

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Supercritical perpendicular shock waves propagating in a two-ion-species plasma are studied using a one-dimensional electromagnetic hybrid code. It is found that, as the number density ratio of heavy ions to protons is increased, the shock with a moderately high Mach number becomes more dynamic and changes its structure periodically. We will discuss the dependence of this periodic variation on model parameters such as the number density ratio of heavy ions to protons, the value of upstream ion beta, the upstream Alfven Mach number, and the electrical resistivity.