



Wave-breaking amplitude in warm pair-ion plasmas

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Maximum sustainable amplitude – so called wave-breaking amplitude of a nonlinear plasma wave in warm nonrelativistic pair-ion plasmas is obtained. General wave-breaking amplitude has been obtained in warm nonrelativistic two fluid plasmas by taking into account the dynamics of both species having finite temperature and having different masses. From that wave-breaking amplitude, we have recovered all previous works on wave-breaking in nonrelativistic plasmas.

Taking the mass ratio equal to unity, we have obtained the wave-breaking amplitude in equal mass pair-ion plasmas having finite temperature. The effect of temperature of the plasma species on the wave breaking amplitude has been discussed. It has been observed that wave-breaking amplitude gradually decreases with the increase of thermal to phase velocity ratio but is always higher than the wave-breaking amplitude in warm single species plasmas.