The ion streaming instability in a plasma sheath with multiple ion species is studied as an eigenvalue problem. Numerically solving the eigenvalue equations of sheath plasma valuables, we find a weak ion streaming instability. The weak instability may enhance the collisional friction between different species of ions. Maybe this is the reason that different ions leave the plasmas nearly at the same velocity. The growth rate of the weak instability is also got and discussed in this letter. Moreover, the conclusion that the large ion inertia may have a suppressive effect on the instability is obtained. And the analysis that the weak instability may be damped by weak collisions between different particles is also shown.

This work is supported by NSFC, under Grant Nos. 40731056, 10975012.
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