



Fluid modeling for quasi-stationary plasmas

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For large scales, fluid modeling such as MHD can be shown to provide correct results for any fluctuation propagating along the magnetic field at a velocity v_f much larger than the particle thermal velocity V_{th} . In these conditions, the CGL "double adiabatic" laws apply as closure equations. When v_f and V_{th} are of the same order, Landau resonance is at work, which demands non-local fluid closures. Nevertheless, when going to cases when fluctuations propagate much slower than the thermal velocity, the situation comes back to a relatively simple state. These conditions are very frequent and their modeling quite necessary, but they remained less studied hitherto. We shall show that fluid closure equations can again be found then, a little less general than the CGL adiabatic ones, but still useful. The physics of the mirror mode, which enters this category, will be revisited in this spirit and the role of the reflected particles investigated