Similarity properties and scaling laws of two-temperature radiating fluids

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Several Astrophysics accretion environments, such as accreted column in magnetic cataclysmic variables [1], are such as the radiative cooling time-scale of the plasma is shorter than the electron-ion collision time-scale. Consequently the electrons will lose their energy rapidly while their energy gains by collisions are unable to keep up radiative loss [2,3]. In this case the two-temperature effects are significant which considerably complicate the structure and the emission of plasma [1,4]. In this work we discuss the specificity of this regime, the scalability and the self-similarity behaviour of flows in such radiating regime. This analyze complete the precedent studies that they have been realized [5,6].

References

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