

Opacity calculations for various plasmas with the improved FLYCHK

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Opacity, which describes the extent to which the radiation is absorbed and scattered in the material, is essential in understanding the fundamental physical properties of high-energy-density(HED) and astrophysical plasmas. FLYCHK, a collisional-radiative code, has been used to calculate the opacities of HED plasmas under a wide range of conditions due to the simplicity and availability of the code [1,2]. However, it has been confirmed that the FLYCHK opacity has limitations in strongly coupled plasmas due to the problem of free-free opacity formalism [3,4]. In this research, we improve the free-free opacity calculation model of FLYCHK and generate opacities of various materials (Al, H, Au). The FLYCHK opacities are in good agreement with those obtained by the Los Alamos opacity code ATOMIC [5].

References

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