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Improved description of ion stopping in moderately coupled and partially degenerate plasma

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Developing an accurate theory of charged particle stopping in dense and warm plasma which is mod-erately coupled and for which the electron component is partially degenerate is a fundamental chal-lenge. An improved approach to ion stopping in such plasmas is developed, where the partial electron degeneracy is treated within the dielectric function approach, with the effect of electron collisions tak-en into account. Various methods of accounting for particle correlations are critically compared. In the case of heavier projectile ions variations arising from these corrections are confronted with contribu-tions arising from the dynamic effective charge of the projectile.

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