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**Charged particle and neutron energy deposition in an inertial confinement fusion plasma leading to internal tritium breeding** KARABI GHOSH, S.V.G. MENON, Theoretical Physics Division, Bhabha Atomic Research Centre — Plasma heating by charged particles and neutrons, energy exchange between ions and electrons and radiative losses are the primary mechanisms determining the ignition conditions in a thermonuclear plasma. In this work the energy leakage probability has been obtained numerically by including the effect of nuclear scattering, small and large angle Coulomb scattering and collective plasma effects. A simple multigroup approach has been developed for energy deposition by neutrons due to nuclear interaction with the ions. Using this accurate model for energy deposition, the concept of internal tritium breeding in DT fusion pellet has been re-evaluated by numerically solving the rate equations for various participating species and energy balance equations for ions, electrons and radiation within the three temperature model. Internal tritium breeding is found to occur even when all the radiation loss mechanisms such as bremsstrahlung and inverse compton scattering are fully accounted for.

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