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Hydrogen Recycling in TRIAM-1M

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The characteristics of particle confinement and recycling in TRIAM-1M are investigated by using the particle balance equation. The total number of ionization events is estimated by employing a simple formula for the H_α radiation profile, and the particle confinement time is estimated from the particle balance at plasma periphery. The recycling coefficient is estimated from particle balance in vacuum vessel with gas feed and exhaust. The recycling coefficient is 0.94 on OH discharges, but it is nearly 1.0 on LHCD discharges. This result shows that the recycling particles replace almost all the particles lost from the main plasma, and the plasma density can be maintained nearly constant without active gas feed on LHCD discharges.