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A test particle simulation for re-evaluation the energy input into the Saturn's atmosphere by keV electrons

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Saturn's inner magnetosphere is dominated by water group neutrals originating from Enceladus, which are a major cause of plasma loss. Our previous studies focused on electron loss mechanisms through elastic collisions with these water molecules, estimating the loss rate and energy input into the atmosphere for electrons with energies ranging from 500 eV to 50 keV. However, the peak energy of this electron energy input remained elusive. These results demonstrated the necessity of constructing a model for the elastic scattering cross sections that depend on electron energy. We re-calculate the keV electrons using a test particle simulation [Tadokoro and Katoh, 2014]. We will show these results.