Cross sections for electron-impact ionization of water molecules

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Abstract :

Theoretical triple differential cross sections for the electron-impact ionization of water molecules at high incident energy are presented. The results are derived using an analytical expression for the transition amplitude in the framework of the one Coulomb wave model. For accurate comparison with experiments, an average of the cross sections on the random orientations of the target has been used. The comparison of our results with the available experimental measurements shows that our formalism is able to describe the water molecule ionization process with good precision. The present approach can be used to describe the ionization of other molecular targets with chemical form XH n by other charged particles.

Keywords : ELECTRON impact ionization; DIFFERENTIAL cross sections; WATER; PHYSICS Experiments; PARTICLES ; MEASUREMENT; COULOMB functions.

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