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Role of anisotropic particle scattering in hydrogen Townsend discharge ZORAN PETROVIC, VLADIMIR STOJANOVIC, ZELJKA NIKITOVIC, Institute of Physics Belgrade Serbia — In this work we show results of Monte Carlo modeling of electrons and heavy particle induced spatially resolved emission intensity and the Doppler profiles of H lines in pure H_2 discharge focusing on anisotropy of elastic scattering of heavy particles. Electron transport is also modeled by using available differential scattering cross sections. For most intense inelastic scattering processes of heavy particles we used the simplest assumptions. For electrons, H^+, H_2^+, H_3^+, fast H and H_2 we modeled scattering in collisions with the electrodes and with molecules. In particular we analyze how transport of $H^+$and fast H particles is affected by the choice of the model of anisotropic scattering. In order to achieve consistency with the results of other authors we select conditions of simulation appropriate for moderate E/N (E-electric field, N-gas density) that are selected from experimental Townsend discharges in pure H_2. Excellent agreement with experimental results is achieved only when anisotropic scattering is taken into account.

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