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Progress Report

CONTRIBUTION OF Lyα PHOTOIONIZATION TO IONIZATION RATE AND ELECTRON DENSITY CHANGES IN THE IONOSPHERIC D-REGION DISTURBED BY SOLAR X-FLARES

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Lyα radiation has a very important influence on ionization processes in the ionospheric D-region. Practically, it can be taken as the dominant ionization source at altitudes above 70 km during unperturbed conditions. However, sudden large radiation impacts in some other energy domains can significantly influence the ionization rate and, consequently, the rate of other chemical processes. Also, the contribution of various other ionization sources in the ionospheric plasma dynamics can be changed. In this paper, we present a study on contribution of Lyα radiation in the ionization rate and electron density changes when the ionosphere is disturbed by solar X-flares. We give relevant analytical expressions and perform calculations and numerical simulations using data collected by the VLF receiver located in Belgrade, Serbia, during the observation of the low ionosphere using the VLF signal emitted by the DHO transmitter in Germany.