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Simulation of ionospheric heating in Iran coordinates with SAMI2 model

H Mirzaei [1*], R Asdanjad [2], H Mahdavi [3], A Mohammadiha [4], and M Kazemi[2]

1. Department of physics and accelerator, Nuclear Science and Technology Research Institute (NSTRI), Tehran, Iran
2. Department of Energy engineering and physics, Amir Kabir university of polytechnic, Tehran, Iran
3. Department of Atomic and Molecular Physics, Mazandaran University, Mazandaran, Iran
4. Department of Marine Science and Technology, Hormozgan University, Bandar Abbas, Iran

E-mail: hamidreza.mirzaei@aut.ac.ir

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Abstract

In this paper the heating effects was investigated with SAMI2 model. An external Gaussian heating source was considered in electron temperature equation that models the radio frequency heating. The effects of the heating were investigated as a function of the heating period, intensity of the heating source, height of the heating center and different latitude of the heating in Iran coordinates. Results of the simulations show that height of the heating and intensity of the source have main role in the distribution function of the electron density and temperature. This distribution in heating zone and conjugate point was shown. In early time of heating, by increasing the height, the electron temperature was increased dramatically. At low intensity of the heating source, the electron temperature wasn't increased. However, the electron temperature was increased in heating zone after 30 minutes. Also, the heating distributes the electron density counter which represents the reduction of the electron density and the formation of the duct in heating zone and the growth of the electron density at conjugate point. The results show that at low latitude, electron temperature at heating zone and conjugate point was increased more.

Keywords: ionosphere heating, SAMI2 model, plasma, simulation

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