Dariusz Wójcik

Rozprawa doktorska

JOANNA - two-fluid numerical model of a partially ionized solar atmosphere

Abstract

Solar atmosphere is composed not only from ionized but also from neutral particles. The latter are localized in chromosphere, where temperature minimum is located. They dominate in that region, and the ration of neutral to ionized particles reaches 10^4.

Thesis presents JOANNA, a numerical code, developed by author, which allows for numerical simulations of time evolution of two-fluid equations. These equations describes dynamics of two fluids, one composed of ions and electrons, second composed of neutral atoms.

The results of published articles, included in thesis, shows that due to the two-fluid interactions it is possible to generate observational data such as entropy modes or solar wind. The reaserch conducted with the use of the code shows the impact of collision between fluids on the behaviour of observed phenomena in the solar atmosphere.

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10.06.2019