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<研 究 論 文>

Emitting Region of Sodium Lines in Solar Prominences

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We have calculated the emission spectra of hydrogen and sodium atoms in the cool part of prominence models which satisfy simultaneously the constraints of radiative transfer, statistical equilibrium and charge-particle conservations.

In the considered range of our model parameters, emission strengths of Hα and NaI D lines increase with the temperature and the total number density. Low pressure models raise the ionization rate highly but yield very weak NaI D line intensities, since these model prominences contain small amounts of free electrons and sodium atoms which have a deep relation with the formation of sodium lines. We find that sodium D lines should be emitted in the high pressure region of prominences, and that their intensities are difficult to attain in the cool core of any model prominence with a temperature as low as 4,000K. In order to explain consistently the spectral emissions of Hα and NaI D lines observed in quiescent prominences, a total number density higher than $4E+11/cm^3$ and a temperature over 5,000K are required at least in the cool part of prominences.

Intrinsic Color of Intermediate Population II F-Stars

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We derived an empirical relation for the intrinsic colors of intermediate population II F-stars by analyzing the *uvby*, Hβ photometry of Olsen (1983) in which *uvby*, Hβ photometry of about 2,000 intermediate population II F-stars are included.

The distribution of $E(b-y)$ along the distances from the sun shows that our calibration is better than that of Crawford relation (1975) for the intrinsic colors of intermediate population II