

RADIATIVE ION-ATOM COLLISIONS IN STELLAR ATMOSPHERES

Vladimir A. Srećković¹, Anatolij A. Mihajlov¹, Ljubinko M. Ignjatović¹,
Milan S. Dimitrijević^{2,3}, Aristophanes Metropoulos⁴

¹Institute of Physics, University of Belgrade, P.O. Box 57, 11001, Belgrade, Serbia;

²Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia

³Observatoire de Paris, 92195 Meudon Cedex, France

⁴Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation,
Athens, Greece

In this lecture, we will present results of our investigations of the influence of the processes of radiative charge exchange in symmetric and strongly non-symmetric ion-atom collisions on the opacity of solar and stellar atmospheres in UV and VUV regions. We considered several ion-atom systems ($H + H^+$, $He + He^+$, $He + H^+$ and $H + A^+$, where $A = Li, Na$ etc.) and determined some characteristics, such as molecular potential curves and dipole matrix elements. They were used for the determination of coefficients of spectral absorption due to examined processes, together with the corresponding molecular photo-dissociation processes, in the atmosphere of the Sun and some DB white dwarfs. It was found that the influence of the considered processes should be taken into account for modeling of stellar plasma and analysis and synthesis of stellar spectra, since for example these processes generate rather wide and firm molecular absorption bands in the UV and VUV regions, which neglectation will introduce errors in the interpretation of the observational data.

MINI PROJECTS

OPTICAL MONITORING OF HIGH ENERGY EMITTING GALACTIC NUCLEI

G. La Mura¹, D. Bindoni¹, S. Ciroi¹, V. Cracco¹, F. Di Mille¹, F. Gabrielli¹, D. Ilić²,
L. Č. Popović³, P. Rafanelli¹, L. Vaona¹

¹Department of Astronomy, University of Padova, Vicolo Osservatorio, 12, 35100
Padova, Italy

²Department of Astronomy, Faculty of Mathematics, Studentski Trg 15, 11000 Belgrade,
Serbia

³Astronomical Observatory, Volgina 7, 11060 Belgrade 38, Serbia

Approximately 20% of nearby galaxies show hints of energetic activity in their nuclear regions, through the presence of appreciable amounts of ionized gas. The source of activity is most often identified either with very young stellar populations, dominated by hot, massive stars, or with non-thermal processes occurring in the galactic nuclei.