DESTRUCTION OF SOME MOLECULAR IONS OF ASTROPHYSICAL INTEREST

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Opacities of stellar atmospheres are caused by a huge number of radiative processes. As part of the development of more sophisticated stellar atmosphere models, we can further explore known processes and include all processes not previously discussed (Srećković *et al.* 2017). The average cross-section for the photodissociation and the corresponding spectral absorption coefficients of the molecular ions Li_2^+, Na_2^+, $LiNa^+$, H_2^+ and HeH^+ are calculated for the wide region of temperatures and wavelengths ready for further use with a particular accent to the applications for astro plasma research and low temperature laboratory plasma research.

The results for the average photodissociation cross-sections and rate coefficients of the diatomic molecular ions as examples are presented in this poster. The results show the behavior of destruction cross-section and rate coefficient as a function of wavelengths¸ for a wide range of temperatures T, which are relevant for modeling astrophysical plasmas (Ignjatović *et al.* 2017) and low temperature laboratory plasma research created in gas discharges (Marinković *et al.* 2017), where plasma conditions may be favorable for processes investigated here (Pichler *et al.* 2017).

References

Srećković, V. A., Ignjatović, L. M., Jevremović, D., Vujčić, V., & Dimitrijević, M. S. : 2017, *Atoms*, **5**(3), 31.
Marinković, B. P., Jevremović, D., Srećković, V. A., Vujčić, V., Ignjatović, L. M., Dimitrijević, M. S., & Mason, N. J.: 2017, *Eur. Phys. J. D*, **71**(6), 158.
Pichler, G., Makdisi, Y., Kokaj, J., Mathew, J., Rakić, M., & Beuc, R. : 2017, *J. Phys. Conf. Ser.*, **810**, 1, 012013.
Ignjatović, L. M., Srećković, V. A., & Dimitrijević, M. S.: 2019, *Mon. Not. R. Astron. Soc.*, **483**(3), 4202.

DISTURBANCES OF THE LOWER IONOSPHERE INDUCED BY SOLAR FLARES DURING TRANSITION PHASE OF 24 SOLAR CYCLE

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VLF radio amplitude and phase measurements are used to study changes in the reflection height and sharpness of the D region of the ionosphere induced by different classes of solar flares during the phase transition of 24 Solar Cycle. Solar flares of C, M and X (up X9) classes occurred in this period. Our results are based on investigations of amplitude and phase perturbations of VLF radio waves during time sectors before dusk or after dawn. These perturbations are usually higher than the perturbations occurring during local noon under similar intensities of solar flares. Also, the values of perturbations are different over VLF short (located in one time sector) or long (located over five or six time sectors) distances between transmitters and Belgrade site.

COOPERATION BETWEEN THE ASTRONOMICAL OBSERVATORY IN BELGRADE AND INSTITUTE OF PHYSICS BELGRADE IN INVESTIGATION OF COLLISIONAL AND RADIATIVE ATOMIC PROCESSES IN ASTROPHISICS

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In this poster we present the results of man-years cooperation between members of the Institute of Physics Belgrade and members of the Astronomical Observatory in Belgrade in the field of investigation of radiative and collisional atomic processes in astrophysics.