The ExoMol project: progress and updates

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The ExoMol project had a major data release last year [1]. The project is continuing to (a) provide line lists for molecules of importance to exoplanetary studies with 92 currently available and studies on species such as AlF, O_2, CS_2, HCO^+, NO^+, OH^+, NH^+ and BH in progress; (b) to use the MARVEL procedure to enhance the accuracy of the line lists making them suitable for high resolution cross-correlation studies. The high resolution data can be accessed directly using the ExoMolHR front end [2]. The ExoMol database is being extended to consider ultraviolet wavelengths where (continuum) photoabsorption and photodissociation are important. A new photo dissociation database, ExoPhoto, has been launched [3] which contains temperature-dependent cross sections calculated by ExoMol and the PhoMol and UGAMOP projects, and measured by DTU and the EXACT project. Our aim to is significantly expand the ExoPhoto database. We now also provides atomic data in a new ExoMol-format database called ExoAtom [4]; these data were taken from the NIST and Kurucz compilations. We would welcome feedback on what other data are needed both in the form of specific species that should be studied and data types.

[1] J. Tennyson, S.N. Yurchenko, J. Zhang and others, The 2024 release of the ExoMol database: molecular line lists for exoplanet and other hot atmospheres, *J. Quant. Spectrosc. Rad. Transf*., **326**, 109083 (2024).

[2] Jingxin Zhang, C. Hill, J. Tennyson and S.N. Yurchenko, ExoMolHR: A Relational Database of Empirical High-Resolution Molecular Spectra, *Astrophys. J. Suppl*., **276**, 67 (2025).

[3] Qing-He Ni, C. Hill, S.N. Yurchenko, M. Pezzella, A.Z. Fateev, Zhi Qin, O. Venot and J. Tennyson, ExoPhoto: A database of temperature-dependent photodissociation cross sections, *RAS Tech. Instr*., (submitted).

[4] Qing-He Ni, Rujia Wang, Tianyang Xie, Jingxin Zhang, C. Hill, S.N. Yurchenko and J. Tennyson, ExoAtom: A Database of Atomic Spectra in ExoMol Format, *RAS Tech. Instr*., (submitted).