

## WG “Spectroscopic and Radiative Data for Molecules” in Commission B5

### I. Purpose

The Working Group on Spectroscopic and Radiative Data for Molecules provides regular updates on the available experimental and theoretical results of relevance to astronomical studies. The focus is on information for rotational, vibrational, and electronic transitions. These radio, infrared, visible, and ultraviolet data are needed to infer abundances and physical conditions (such as temperature, density, and the strength of the radiation field) in many environments. The environments include the Solar System (planetary and cometary atmospheres as well as those of exoplanets), stars and related objects (brown dwarfs, late type main sequence stars, red giants, and asymptotic giant branch stars), interstellar matter (disks around pre-main sequence stars, interstellar clouds in the Galaxy and beyond, reflection nebulae, and planetary nebulae), and extragalactic phenomena (active galactic nuclei and quasar absorption systems). The members of the Working Group have the necessary expertise in radio, infrared, and visible/ultraviolet observations and laboratory (experimental and theoretical) astrophysics.

### II. Ongoing Efforts

The Working Group surveys the recent literature in astrophysics, physics, and chemistry for the latest molecular data for use in astronomy. The members also are involved in maintaining databases, such as the Cologne Database for Molecular Spectroscopy, and report on the work of others, including the JPL Catalog, HITRAN, HITEMP, and ExoMol. The main product is a comprehensive triennial survey of references to data for future astronomical studies.

### III. Planned Activities

We are looking into the possibility of incorporating results on van der Waals complexes, mainly involving H<sub>2</sub> or He, and are considering an abbreviated section to our next survey for the General Assembly in 2021. The goal is to have a full summary for subsequent triennial reports.

Chair: Steven R. Federman (Univ. of Toledo)

Co-Chairs: Peter F. Bernath (Old Dominion Univ.) and Holger S.P. Müller (Univ. of Köln)