

WG “Spectroscopic and Radiative Data for Molecules” In Commission B5

I. Purpose

The Working Group on Spectroscopic and Radiative Data for Molecules provides updates on the available experimental and theoretical results of relevance to astronomical studies in its Triennial Report. 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 astronomical research. 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 continues to be a comprehensive triennial survey of references to data for future astronomical studies.

III. Planned Activities

The addition of van der Waals complexes in the most recent Triennial Report will be a component of future reports. With the retirement of Ken Kawaguchi, we will seek another member of the Working Group who complements the activities of the remaining members.

Chair: Steven Federman

Members: Peter Bernath, Jose Cernicharo, Holger Müller, Nami Sakai, and Jonathan Tennyson