THE COLOGNE DATABASE FOR MOLECULAR SPECTROSCOPY, CDMS, IN TIMES OF HERSCHEL, SOFIA, AND ALMA

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The CDMS provides in its catalog section atomic and molecular line lists for species that have been or may be observed in space by radio astronomical means.[abc] The line list of each molecule is gathered in an individual entry; minor isotopologs have separate entries, and the same applies to excited vibrational states with the exception of some diatomic molecules. With 5 to 10 new or updated entries each month, the CDMS catalog has been growing rapidly over the past 10 years: since February 2009, there have been more than 500 entries in the CDMS − with many more entries to be created. Entries are generated from fitting (mostly) laboratory data to accepted Hamiltonian models. Despite many dedicated laboratory spectroscopic investigations in recent years, accurate data is still lacking frequently − in particular at higher frequencies, for minor isotopic species, for excited vibrational states, or for somewhat larger molecules. While high frequency data are of special concern for the Herschel satellite, scheduled to be launched in mid-April 2009, or for the Stratospheric Observatory For Infrared Astronomy (SOFIA), the remaining issues mentioned above are important especially for telecope arrays such as the Atacama Large Millimeter Array (ALMA).

The main features of the CDMS catalog will be described, including recent developments concerning new entries as well as available and planned features. In particular, we will discuss issues relevant for generating a consolidated database that also takes into account information from other databases.

Attention will be given to laboratory spectroscopic needs for missions such as Herschel and SOFIA on one hand and for ALMA, the Expanded Very Large Array (EVLA), and other facilities on the other, both, in terms of general aspects and in terms of specific examples. Selected contributions from the Cologne spectroscopy laboratories to address these needs will be presented.

[a] H. S. P. Müller, S. Thorwirth, D. A. Roth, G. Winnewisser, *Astron. Astrophys.* **370** (2001) L49−L52.

[b] H. S. P. Müller, F. Schlöder, J. Stutzki, G. Winnewisser, *J. Mol. Struct.* **742** (2005) 215−227.

[c] web-page: http://www.astro.uni-koeln.de/cdms/.