The Cologne Database for Molecular Spectroscopy: Recent Developments and Outlook for ALMA

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More than 10 years ago, the Cologne Database for Molecular Spectroscopy, CDMS, was founded to provide in its catalog section rest frequencies with sufficient accuracy on mostly molecular species which have been or may be observed in space by largely radio astronomical means. Entries are usually generated from critically evaluated laboratory data employing established Hamiltonian models. Each molecule has a separate entry, minor isotopic species are always, excited vibrationally states are usually presented separately. The CDMS is available on the internet free of charge [1], and a very early [2] as well as a more recent account have been published.

As of September 2012, the CDMS has more than 650 entries, of which at least 280 have been detected in space. Moreover, they make up a large fraction of the more than 170 different molecules which have been detected in the interstellar medium or in circumstellar envelopes of late-type stars. Access to the CDMS has increased steadily, and it is at present at a level of around 2000 accesses each month.

Future entries will be generated in particular to support observations with ALMA. Hence, the focus will shift to complex molecules as well as vibrational or isotopic satellites of known interstellar molecules, which will be important in observations of star-forming regions, and to metal containing or other refractory molecules which may be observed increasingly in circumstellar envelopes of late-type stars.

Initially, entries were created as ascii tables. About 3 years ago, a process has been initiated to put the CDMS into a database environment in the framework of the Virtual Atomic and Molecular Data Centre (VAMDC) [4,5]. The release of a test version is intended for September 2012. The advantages of this transition as well as various aspects of the CDMS will be presented.

References