Splatalogue - Database for Molecular Spectroscopy in the New Era of Astronomical Facilities

Anthony J. Remijan[a], Robin L. Pulliam[a], Andrew Markwick[b], Brian R. Kent[a]

[a]*National Radio Astronomy Observatory*
520 Edgemont Road, Charlottesville, VA 22903

[b]*Jodrell Bank Centre for Astrophysics, University of Manchester*
Oxford Road, Manchester M13 9PL

Abstract. The next generation of powerful radio and millimeter/submillimeter observatories (e.g. Karl G. Jansky VLA, Robert C. Byrd GBT, ALMA) are now either in full operation or will be completing construction within the next 12 months. In addition to being the most sensitive facilities every built for astronomical observations, each facility now has the capability to obtain broadband spectral line data (8 GHz of instantaneous bandwidth) at high spectral resolution (m/s velocity resolution). As such, these facilities will uncover a vast new array of molecular material never before seen in the universe and will require extensive resources to help identify spectral line transitions. We describe the compilation of the most complete spectral line database currently assembled for this purpose. The Splatalogue is a comprehensive transition-resolved compilation of observed, measured and calculated spectral lines. Splatalogue currently contains over 5.9 million spectral transitions over 8 different databases. Splatalogue also contains atomic and recombination lines, template spectra, and is completely VO-compliant, queryable under the IVOA SLAP standard. Splatalogue is used worldwide by astronomers preparing their observations using the ALMA Observing Tool and is integrated into the ALMA/VLA data reduction software CASA. Splatalogue can be used by 3rd party packages through the SLAP interface to model and view a host of spectral line data. The details of the database, how it is currently used and how users may access or add to the database though already accepted standards and data formats will be discussed.