A Database on VUV absorption spectra of diatomic molecules using XSAMS

Evelyne Roueff*, Michèle Eidelsberg† and Nicolas Moreau†

* *LUTh, Observatoire de Paris*
† *LERMA, Observatoire de Paris*

Abstract. We present a database aiming to give the full absorption spectrum of molecular Hydrogen and its deuterated variants HD and D_2 as well as carbon monoxide CO. The data represent a compilation from various papers, both experimental and theoretical.

As far as H_2 isotopologues are concerned, values up to J = 30 are included in the database for plasma applications at temperatures of about 5000K. B-X, B'-X, C-X and D-X transitions are reported.

We have extended the J values of the CO spectrum as well and report absorption transitions within the fourth positive A-X band system as well as the transitions due to the intersystem a'-X, e-X, d-X bands. o-c values are provided when available.

The various quantum numbers and quantities such as transition wavenumber, transition wavelength, oscillator strength are described within xml language, following the Case by Case Schema for Molecular States in XSAMS v0.3 (http://www.vamdc.org/documents/standards/dataModel/vamdcxsams/index.html).

Validation procedures of the various symmetry properties and parity labels within the xml schema have been found very useful for checking their consistency.

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