RECOVERY OF LEGACY PAPER SPECTRA AND NEW RESULTS ON THE ROTATIONAL SPECTRUM OF $H_2O\cdots HF$

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The situation when a spectrum exists only in the form of a paper record and contains valuable unprocessed information is not that rare. In the case of broadband spectra with a rich information content it is very desirable to convert such spectra into a digital form that will be amenable for use with contemporary packages for graphical assignment.[a]

The RAD spectrum of the $H_2O\cdots HF$ hydrogen bonded dimer recorded in the 1980's at Nizhny Novgorod is an example of such a valuable legacy spectrum. Only a small proportion of the lines in this spectrum have been assigned and measured.[b] A special software package has been written to convert the original spectrum from many strip chart records into a unified, calibrated digital spectrum, which covers the frequency region 182-352 GHz and 11 succesive $J+1 \leftarrow J$ transitions. The package is described in detail, is expected to be of universal applicability, and has been made available on the PROSPE website.[c] Initial results concerning the analysis of this spectrum are reported, and it is aimed to considerably improve the understanding of the internal dynamics in $H_2O\cdots HF$ over that reached earlier on the basis of the cm-wave rotational spectrum.[d]

[a] Z.Kisiel et al., *J. Mol. Spectrosc.*, **233**, 231-243 (2005).
[b] S.P.Belov et al., *J. Mol. Spectrosc.*, **241**, 124-135 (2007).
[c] Z.Kisiel, Programs for ROtational SPEctroscopy, *available at* http://info.ifpan.edu.pl/~kisiel/prospe.htm.
[d] Z.Kisiel, A.C.Legon, D.J.Millen, *Proc. Roy. Soc. Lond. A*, **381**, 419-442 (1982).