THE NEW COMPLETE WATER LINE LIST POKAZALI

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The first, accurate hot water linelist including energy levels up to 35 000 cm$^{-1}$ is called BT2$^1$ and it has been used very successfully in numerous applications. Recently, this linelist has been superseded both in accuracy and completeness by the hot water linelist POKAZATEL$^2$, which for the first time included all the bound state energy levels up to dissociation and is therefore complete.

There are, however, two relevant areas for improvement of the linelist. First, one has to provide labels for as many energy levels as possible. Labelling is necessary for linewidth calculation, as linewidths depend on the vibrational and rotational quantum number labels. Progress in this direction is described in a poster$^3$. A second, important goal is the improvement of the accuracy of the underlying PES and DMS.

In the POKAZATEL linelist the accuracy of the PES used for energies below 25000 cm$^{-1}$ was not as high as the one provided by the newer PES - PES15K$^4$ up to 15 000 cm$^{-1}$ nor as the accuracy provided by the PES by Bubukina et al. $^5$ from 15000 cm$^{-1}$ to 25000 cm$^{-1}$. In this poster we will present a newly developed PES which is global and gives, for all energy ranges, an accuracy comparable to the very best available PESes. We started to calculate energy levels and wavefunctions as well as dipole moment transitions between them using the recently developed DMS-CKAPTEN$^6$. The progress towards the complete linelist we call POKAZALI will be reported on at the conference.