NEW TECHNIQUES FOR THE CALCULATION OF RO-VIBRATIONAL ENERGY LEVELS OF CH4

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We are in the process of developing a second generation program for the calculation of ro-vibrational energy levels of CH4 using full dimensionality. The choice of a new coordinate system facilitates the use of symmetry and further motivates a new basis set which turns out to allow a much more diagonally dominant description of the bends. Thus the assignment of quantum numbers is greatly improved. We will discuss these and related issues as well as some new results using our latest *ab initio* potential energy surface.