FITTING WATER WITH AN EULER SERIES

HERBERT M. PICKETT and JOHN C. PEARSON, *Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California 91109*.

We have refit the water spectra for the (000), (010), (020), (100), and (001) vibrational states using a new fitting procedure that is based on a technique developed by Euler. The goal of this work is to fit the microwave and infrared line position data to the accuracy of the measurements. We have achieved satisfactory fits up to J = 22 for all states. The fit for (000) and (010) reproduces the data within experimental error. The triad data has some mutual inconsistencies, but we have obtained a satisfactory fit up to J = 22 and K = 20 with a mean fit error that is 10 times the estimated experimental error. Code for calculating the Euler series parameters are included in the SPFIT program set.