QED CORRECTION FOR $\text{H}_3^+$

LORENZO LODI, OLEG POLYANSKY, JONATHAN TENNYSON, Department of Physics and Astronomy, University College London, London, IX, United Kingdom; ALEXANDER ALIJAH, GSMA - Champagne Ardennne, Université de Reims, Reims Cedex 2, France; NIKOLAY FEDOROVICH ZOBOV, Microwave Spectroscopy, Institute of Applied Physics, Nizhny Novgorod, Russia.

A quantum electrodynamics (QED) correction surface for the simplest polyatomic and polyelectronic system $\text{H}_3^+$ is computed using an approximate procedure. This surface is used to calculate the shifts to vibration-rotation energy levels due to QED; such shifts have a magnitude of up to $0.25 \text{ cm}^{-1}$ for vibrational levels up to $15000 \text{ cm}^{-1}$ and are expected to have an accuracy of about $0.02 \text{ cm}^{-1}$. Combining the new $\text{H}_3^+$ QED correction surface with existing highly accurate Born-Oppenheimer (BO), relativistic and adiabatic components suggests that deviations of the resulting ab initio energy levels from observed ones are largely due to non-adiabatic effects.