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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Technical Note: Bimodality in Mesospheric OH Rotational Population Distributions and Implications for Temperature Measurements" *by* Konstantinos S. Kalogerakis

Anonymous Referee #1

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Technical Note: Bimodality in Mesospheric OH Rotational Population Distributions and Implications for Temperature Measurements

By K.S.Kalogerakis

General Comments

1. OH rotational spectra are widely used for the estimation of upper mesosphere temperatures. The author discusses the complexity of the vibrational-rotational structures.

He demonstrates the validity of an exponential-gap rotational relaxation model and the bimodality of the OH state distribution. He suggests that more complicated structures beyond bimodality are possible. These are important and interesting results. 2. The author shows that it is important to take bimodality into account when deriving temperatures from the OH spectrum. Large errrors can occur if bimodality is neglected. This is an important and intriguing result for atmospheric physics. 3. The author makes suggestions how to mitigate the problem. This again is interesting, but not easy to accomplish. 4. The paper is well written. 5. The paper is recommended for publication after minor changes have been made.

Specific Comments.

1. Page 4, Line 12: "...OH radiative lifetime decreases as the vibrational level decrease..." It should be the other way round! Please check!

Technical Corrections

1. Page 3, Line 24, and Fig.3: 294 K or 293 K? 2. Page 5, Line 5: "Thus it is reasonable..." 3. Page 6, Lines 11pp: Anlauf et al. goes after Adler-Golden 4. Page 7, Lines 4pp: Hickson et al. goes after Grygalashviyly

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