

## **APPLICATION OF THE $\Gamma$ -THEORY FOR THE CONSTRUCTION OF SPECTRAL MODELS OF ATMOSPHERIC GASES WITH ADJUSTABLE ACCURACY OVER NON-UNIFORM PATHS**

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**ABSTRACT.** The objectives of the present work are to provide some introduction to the theory underlying the novel spectral Gamma function, and to describe a first application of this new modeling strategy to narrow band atmospheric calculations. Among other, a general formulation is proposed that includes both the CKD (one pseudo-spectral dimensional Gamma model) and LBL ( $N$  pseudo-spectral dimensional Gamma model) techniques as particular limiting cases. This model allows the construction of approximate methods with an accuracy that the user can select in advance, making the present approach somewhat unique in the gas radiation literature.

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