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method for the solution of Radiative transfer equation in absorbing-emitting non-gray medium.*

A semi-analytic methodology is developed for the solution of radiative transfer equation in an absorbing and emitting medium. The absorption cross-section and absorption line black body distribution function is obtained from Spectral line based weighted sum of gray gas model. The radiative transfer equation is soled for each gray gases following and exact approach involving exponential function. The contribution of each gray gases is integrated to obtain the radiative heat flux and divergence of radiative heat flux. The model is validated with the work of Denison, M. K., and B. W. Webb. The medium chosen for solution consist of CO_2 and H_2O for both Air-Broadening and Self-Broadening. (Received December 17, 2009)