BENCHMARK RADIATION MODELING DATA FOR TWO FLAMES RELEVANT TO FIRE SIMULATION

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ABSTRACT. This work reports two benchmark data sets for radiative heat transfer in two combustion systems relevant to fire simulations. The cases include a non-sooting turbulent methanol pool fire and a sooting ethylene flame. The base configurations were simulated with large eddy simulation (LES) approaches using two different codes. Multiple frozen snapshots from these LES were radiatively evaluated using a photon Monte Carlo radiation solver and a line-by-line spectral model. The data extracted include heat flux at different surfaces, local and global radiative emission and absorption statistics, as well as spectral distribution of various components in radiative heat transfer.

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