

Abstract Submitted
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Chemical Source Term Closure in Turbulent Combustion using Approximate Deconvolution Methods¹ QING WANG, Stanford Univ — A closure model for the chemical source term in Large Eddy Simulation (LES) using the Approximate Deconvolution Method (ADM) is proposed. The model recovers the scalar field that is discarded by the LES filter from the information retained in the large-scale structures using an approximate deconvolution operator. The nonlinear chemical source term is then evaluated based on the de-convoluted scalar field. Since this formulation makes no presumptions on the combustion regime, it is applicable to complex combustion configurations and detailed chemistry. The capability of this sub-grid closure model is examined in an a priori study, and the performance, accuracy, and computational cost are characterized through a posteriori simulations.

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