

Abstract Submitted
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A New Method for Large Eddy Simulation of Turbulent Premixed Combustion SEUNG HYUN KIM, The Ohio State University — A new method for large eddy simulation (LES) of turbulent premixed combustion is presented. The method is based on the front propagation formulation (FPF) of filtered reaction rates. In premixed combustion LES where a filter scale is typically taken as grid spacing, the spurious propagation of filtered flame fronts can occur due to under-resolved reaction zones. The FPF method avoids this spurious propagation by discretely preserving the total reaction rates on computational grids. The method not only recovers the flamelet limit when turbulence is not strong enough to perturb inner structures of the flame fronts, but also allows for the broadening of filtered flame fronts by turbulence. The FPF method is applied to LES of laboratory flames. The analysis and validation of the method will be presented.

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