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Synergistic Activities

The co-investigator has expertise in development of turbulent combustion submodels and has a wealth of experience developing several combustion codes at different institutions. Development of databases for jets in cross flow from large-scale direct numerical simulation in collaboration with the gas turbine industry has resulted in valuable data indicating the importance of low velocity recirculation zones and stratified combustion in the stabilization of flames above a jet in cross flow. Earlier work using DNS to probe fundamental understanding of stratified combustion, investigate appropriate flame markers (progress variables, tracers), and propose new models for the combined effects of flame propagation and mixing integrated provisioning of DNS data with end use. Implementation and validation of theoretically proposed combustion models in commercial CFD codes completes the link between academia and engineer; the co-investigator successfully deployed a model for gaseous auto-ignition using *Fluent*, a commercial CFD code, early in his research career.

Collaborators

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