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Large Eddy Simulation of a Gas-Turbine Model Combustor YEE CHEE SEE, MATTHIAS IHME, University of Michigan — Gas-turbine combustors typically utilize swirling fuel-preparation strategies for flow-stabilization and flame-anchoring. Under such conditions, the flow inside the combustion chamber is highly unsteady and usually accompanied by dynamic flow structures such as precessing vortex cores. Due to this unsteadiness, steady-state flow solvers are not capable of accurately predicting the flow-field. In this study, simulations of a gas-turbine model combustor are performed using unsteady Reynolds-averaged Navier-Stokes (URANS) and large eddy simulations (LES). Simulation results are compared with experimental data to assess the capability of these modelling-techniques in predicting swirling flows under gas-turbine relevant flow-field environments.

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