Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Extension of the Integral Length-Scale Approximation (ILSA) model to passive scalar[1] ZVI HANTSIS, UGO PIOMELLI, Queen's University — The Integral Length-Scale Approximation (ILSA) is a versatile LES model in which the turbulence characteristics fully determine the length scale, rather than being related to the grid size. This approach decouples modeling errors from numerical errors, one of the central complications of LES. ILSA was applied successfully to momentum transport over a variety of flows, both internal and external. In this work, the ILSA model is formulated for passive scalar transport and applied to a plane channel flow over a range of Prandtl numbers. The resulting mean scalar and turbulent scalar fluxes are in good agreement with previous studies. A grid convergence study was performed, demonstrating the decoupling of the model from the numerics. In addition, a clear and rigorous procedure is presented to determine the only model coefficient without the need for *a-priori information.*

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Date submitted: 02 Aug 2020 Electronic form version 1.4