Meeting: 1002, Pittsburgh, Pennsylvania, SS 5A, Special Session on Multiscale Algorithms in Computational Fluid Dynamics

1002-76-181   **Peyman Givi*** (`givi@engr.pitt.edu`), Mechanical Engineering, University of Pittsburgh, Pittsburgh, PA 15261, **Reza M.H. Sheikhi** (`moh3@pitt.edu`), Mechanical Engineering, University of Pittsburgh, Pittsburgh, PA 15261, **Tom G Drozda** (`tgd4@pitt.edu`), Mechanical Engineering, University of Pittsburgh, Pittsburgh, PA 15261, and **Server Levent Yilmaz** (`sly5@pitt.edu`), Mechanical Engineering, University of Pittsburgh, Pittsburgh, PA 15261. *A New Strategy for Turbulence Simulation.*

A new methodology termed the filtered density function (FDF) is developed and implemented for large eddy simulation (LES) of turbulent flows. In this methodology, the effects of the small subgrid scale (SGS) are taken into account by a probabilistic method, whereas the large scale effects are simulated deterministically. The LES/FDF method has proven particularly useful for LES of chemically reacting flows. A modelled transport equation is proposed for the FDF. This equation is solved by a Lagrangian Monte Carlo method. The predicted resutls are assessed via comparison with laboratory and direct numerical simulation (DNS) data. (Received September 13, 2004)