New York Blue Computational Science Project
DEMO FORM

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Project Title: Computational Fluid Dynamics

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Resources Requested and Machine:
New York Blue/P: 512 nodes (24x7) average rate of usage.

Code(s) FronTier

Description of Project:
We will study hydrodynamic instabilities and fluid mixing. The relation of LES to DNS and subgrid models for turbulent flow will be explored. A specific emphasis is placed on two phase flow.

Applications include spray and atomization for combustion in a diesel engine, occlusion of flow in porous media due to mineral deposits resulting from microbial growth, and studies of fluid mixing for inertial confinement fusion.

The main simulation code will be our FronTier (front tracking) code. Its use and scaling on BG has been demonstrated by Roman Samulyak and Wurigen Bo. Generally the wall time for simulation was about 3X the comparable number of node hours for time with far fewer nodes but on a 3X faster (Intel hardware) cluster.

Other Users Associated with this Project:
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