



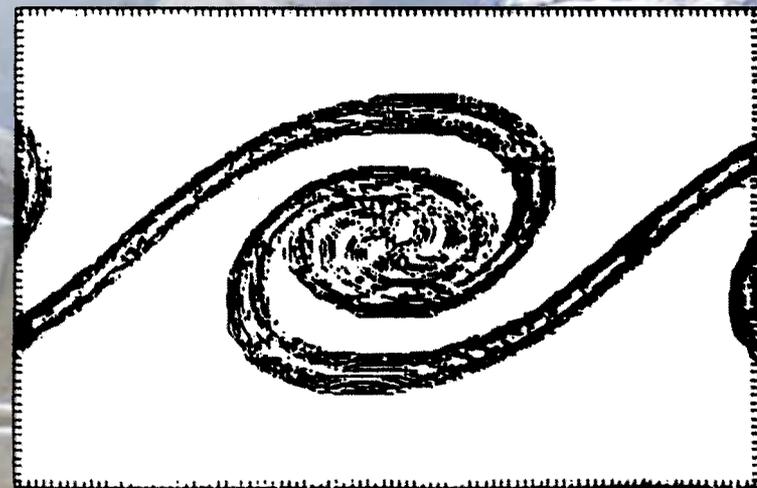
Glenn Research Center



Simulation of Features of Turbulent Combustion

Numerical simulation allows aspects of turbulent combustion to be studied but companion experiments are not feasible in normal gravity:

- 1) Simulations are limited to slow quasi-turbulent processes having limited ranges of length scales.
- 2) Buoyancy invariably accelerates combustion flows to high Reynolds numbers.
- 3) The full range of length scales must be resolved since mixing is dominated by large scales while combustion occurs at small scales.
- 4) Estimates of computer development imply 50–100 years for simulations to approach feasible experiments (and practical applications).



Experiments in low gravity can accomplish the merger much sooner, as well as offering valuable insights of their own.