

CENTER FOR TURBULENCE RESEARCH



Summer Research Opportunity

June 24 – July 20, 2012

<http://ctr.stanford.edu>



The Center for Turbulence Research invites applications for participation in its fourteenth biennial summer research program. The objective of the program is to promote development and evaluation of new ideas in turbulence research. It is expected that novel ideas and preliminary results generated during the summer program will be of sufficiently high caliber to lead to publications and to provide grounds for new research in the participants' home institutions.

Interested scientists may consider submitting proposals in general areas of multi-physics turbulence research. Examples of areas currently under study at CTR are: turbulent combustion in subsonic and supersonic regimes, large eddy simulation (LES) of multi-phase flows including sub-filter modeling of primary atomization, bubble and drop formations and modeling of turbulence/particulate interactions, wall boundary conditions and sub-filter modeling for high Reynolds number LES, aerodynamic noise and hydroacoustics, flow control and optimization, modeling of transition to turbulence, boundary layers over rough or super-hydrophobic surfaces, cavitation, radiative transfer, error estimation and uncertainty quantification in numerical simulations, numerical algorithms for complex flows and for emerging computer architectures, and novel data mining techniques.

Participants will have the unique opportunity to make use of the Center's advanced numerical simulation technology including an unstructured code for multi-phase reacting flows in complex configurations. Computer expertise is not essential, and applications from experimentalists and theoreticians are encouraged. Scientific staff members and graduate students, highly skilled in computer programming and familiar with the Center's post-processing systems, will provide support. Faculty applicants may propose to have their own advanced doctoral students accompany them.

The available CTR databases include velocity, pressure, vorticity, and scalar fields in several compressible and incompressible flows. Three-dimensional fields at several instants and some time series are available for each flow. Several large-memory multi-processor Linux systems, including the Certainty Cluster with 7000 cores and 120 GPU's, numerous graphics workstations and a visualization system with a large 9 tile display for 3-D data analysis will be available to the participants. Some participants in the recent past summer programs have used their own databases and codes. Although most of the summer program will be based on existing data, a few new cases suggested by the participants may be carried out in preparation for the summer program.

Approximately fifty participants will be selected on the basis of their research ideas and the overall synergistic potential of the group. Fellowships will provide appropriate support, including travel and a stipend. Potential applicants unfamiliar with the CTR summer programs and the format of the program and examples of previous research performed should visit the CTR web site: <http://ctr.stanford.edu>.

The 2012 program will take place on the 25th anniversary of the founding of CTR and its first Summer Program in 1987.

Application Procedure:

Applicants should submit a brief proposal stating the fundamental questions to be addressed and/or the data and the computer codes to be employed, along with financial requirements; include a current vita. Applications must be received by January 15, 2012. Awards will be announced on March 1, 2012. Housing arrangements will be made thereafter.

Write to:

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2012 CTR SUMMER PROGRAM

1987-2012 Anniversary