CENTER FOR TURBULENCE RESEARCH

Summer Research Opportunity

June 23rd - July 19th, 2024

The Center for Turbulence Research invites applications for participation in its 19th biennial Summer Program. The objective of the Summer Program is to promote development and evaluation of novel concepts in fluid mechanics with emphasis on multi-physics turbulent flows. It is expected that the novel concepts and preliminary results generated during the Summer Program will be of sufficiently high caliber to lead to journal publications and to provide grounds for opening new and exciting lines of research in the community-at-large, with longer term practical applicability envisioned.

Research of interest to CTR is broadly defined by the involvement or the controlling role of turbulent multiphysics in theory, computation and experiments. Examples include, but are not limited to: turbulent and transitional flows, separated flows, flow-structure interactions, wall roughness effects, hydroacoustics, compressible aerodynamics, hypersonics, high-enthalpy effects, aeroacoustics, multiphase flows, reactive flows, turbulent combustion and propulsion, thermal processes, stratified turbulence, rotating flows, mesoscale and submesoscale processes, wave-turbulence interactions, atmosphere-ocean interactions, sediment transport and morphodynamics, cloud microphysics and indoor/urban fluid dynamics, algorithmic and statistical analysis tools, including subgrid scale and wall modeling for LES of complex flows, uncertainty quantification, multi-fidelity simulations, novel data-mining and data-browsing techniques to enable physics learning from large datasets.

Applications from computationalists, experimentalists and theoreticians are encouraged. Applicants may request support from CTR research staff and graduate students skilled in using and accessing CTR's facilities, including computer programming, the Center's computational infrastructure and computational and experimental datasets. Several large memory multiprocessor Linux systems, high performance compute clusters with over 30,000 cores, GPU's, numerous graphics workstations and a large visualization system will be available to the participants.

Participants will be selected on the basis of the scientific novelty of their proposals, the overall synergistic potential of the group and multi-institutional collaborations and the utilization of CTR's intellectual resources and infrastructure. Applicants are encouraged to identify faculty and research staff at CTR as potential collaborators. Faculty applicants may propose to have one advanced doctoral student accompany them; graduate students should be accompanied by their thesis advisors on-site throughout the entire Summer Program. CTR fellowships will provide support for participant travel and accommodation.

Visit the CTR website http://ctr.stanford.edu/ctr-summer-program for more information regarding previous research performed during the CTR Summer Programs.

Application Procedure:

Applicants should submit a brief proposal (no longer than 4 pages) stating: (i) fundamental questions to be addressed, (ii) how exactly the proposed work will improve the state-of-the-art, (iii) technical approach, (iv) a list of suggestions for on-site personnel that may be involved in the project, (v) goals for the summer research at CTR, and (vi) the data, codes and facilities to be employed. Attached to the proposal should be an appendix containing the CVs of the participants. The cover letter should include an estimate of financial requirements for attendance. Applications must be received by January 15. Awards will be announced on February 28; housing arrangements will be made there after.

Submit applications at https://ctr.stanford.edu/events/ctr-summer-program

Center for Turbulence Research, Stanford University, (650) 736-0766

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