Company Name: Argonne National Laboratory
Location: 9700 South Cass Ave. Lemont, IL 60439
Company website: www.anl.gov.
Link to apply - https://www.anl.gov/hr/careers.
Job Requisition – 417094
Contact: Venita Nance – Sr. Talent Acquisition Specialist – vnance@anl.gov – 630-252-6759
Position Title: Postdoctoral Appointee – High-Fidelity CFD Modeling for Scale-resolving Simulations of Power Generation and Propulsion Systems

Job Description: The Multiphysics Engine Computations group at Argonne National Laboratory is seeking to hire a postdoctoral appointee for performing high-fidelity CFD simulations of turbulent reacting flows for power generation and propulsion applications. The successful candidate's research will involve synergetic collaborations with a multi-disciplinary team involving engine modelers and experimentalists, and computational scientists to enhance the predictive capability for next-generation engine modeling code.

Perform high-fidelity Computational Fluid Dynamics (CFD) simulations of turbulent combustion flows in gas turbine and internal combustion engines using spectral element method (SEM). Implement submodels for turbulence, two-phase flow, and combustion into SEM codes. Perform scalability studies and port these simulations on leadership class supercomputing resources, identify and improve the bottlenecks in scaling the simulations. Analyze large simulation datasets to gain new insights and develop reduced-order combustion and wall models with improved predictive accuracy.

Position Requirements:
- Ph.D. in mechanical/aerospace engineering, applied mathematics, chemical engineering, or a related discipline.
- Expertise in Nek5000 or other comparable spectral element method codes.
- Experience in running high-fidelity simulations on leadership class supercomputers.
- Knowledge of performing scalability studies to identify and improve bottlenecks in large codes.
- Understanding of high-order methods for fluid flows.
- Understanding of turbulent combustion modeling.
- Experience in geometry optimization and mesh generation with computer-aided design software.
- Collaborative skills, including the ability to work well with other divisions, laboratories, and universities.
- Ability to demonstrate strong written and oral communication skills at all levels of the organization.
- A successful candidate must have the ability to model Argonne's Core Values: Impact, Safety, Respect, Integrity, and Teamwork.

Preferred Qualifications:
- Experience in interdisciplinary collaborative research.
- Knowledge of large scientific code management and optimization is desirable.