# Argonne Leadership Computing Facility

Accelerating the pace of discovery and innovation
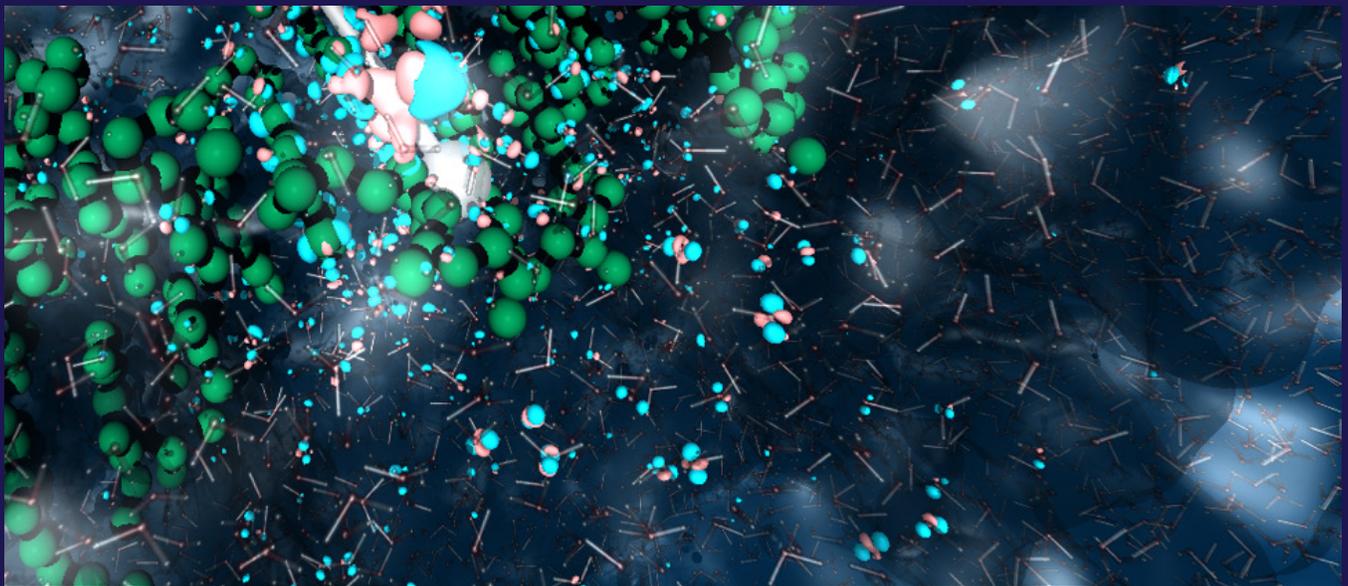
This visualization is a snapshot from a non-equilibrium electron dynamics simulation run on the ALCF's Theta supercomputer. *Image: Yosuke Kanai and Dillon Yost, University of North Carolina at Chapel Hill*

The Argonne Leadership Computing Facility (ALCF), a U.S. Department of Energy (DOE) Office of Science User Facility, provides supercomputing resources and expertise to the scientific and engineering community to accelerate the pace of discovery and innovation in a broad range of disciplines.

Breakthrough Science and Engineering
The ALCF's unparalleled combination of resources is helping scientists advance their research in many fields, enabling high-impact scientific discoveries and transformative technologies.

Biological Sciences	Energy Technologies
Chemistry	Engineering
Computer Science	Materials Science
Earth Science	Physics

Theta, an 11.69 petaflops Intel-Cray supercomputer, is the engine that drives scientific discoveries at the ALCF.

Enabling Science

With hundreds of thousands of processors working in parallel, supercomputers can run simulations of extremely complex physical systems and model physical processes that are too small or large, costly, or dangerous to study in a laboratory.

World-Class Supercomputing

At over 11 petaflops, the ALCF's supercomputer Theta is capable of performing more than 11 quadrillion calculations per second. The facility's high-performance storage and networking infrastructure is designed to efficiently handle massive amounts of data. To further expedite scientific discovery, the ALCF also hosts a powerful visualization cluster for rapid rendering and analysis.

Entering the Exascale Era

The ALCF's next-generation system, Aurora, is slated to be one of the nation's first exascale supercomputers when it is delivered in 2021. Designed in collaboration with industry leaders Intel and Cray, Aurora will help ensure continued U.S. leadership in high-end computing for scientific research, while also cementing the nation's position as a global leader in the development of next-generation exascale computing systems.

Accessing ALCF Resources

The ALCF is available to any researcher in the world with a large-scale computing problem. Researchers gain access to ALCF systems through competitive, peer-reviewed allocation programs supported by DOE and Argonne National Laboratory, and publish their findings in high-impact journals and publications.

Expertise and Support

The ALCF's team of computational scientists, data scientists, performance engineers, system administrators, software developers, visualization experts, and support staff has the skills and expertise to ensure users get the most out of the facility's high-performance computing systems.

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Multidisciplinary Scientific Expertise	Visualization and Data Analysis
Innovative Computational Methods	HPC Systems Administration
Code Porting, Tuning, and Scaling	Technical Support
Data Sciences	User Training

2019 BY THE NUMBERS

U.S. ALCF Users by State

- ■ 100+ Users
- ■ 11–100 Users
- ■ 01–10 Users
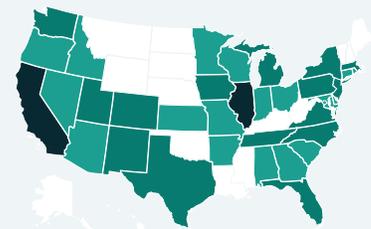
Core-hours of compute time

8.7B

Active Projects

413

Facility Users

1,246

Publications

275+

2019 ALCF Users by Affiliation
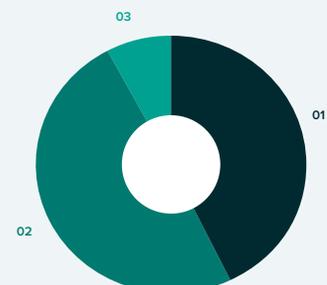
01	Academia	535
02	Government	615
03	Industry	96