



Institute for Theory and Computation

<https://itc.cfa.harvard.edu/>

Over the past two decades, high performance computing has revolutionized astrophysics. On the theory side, simulations running in parallel on hundreds or thousands of processors have made it possible to understand the formation of large-scale structure in the Universe, the growth of supermassive black holes in the centers of galaxies, the formation of Earth-like planets around Sun-like stars, and the nature of the first stars and galaxies. On the observational side, computer-intensive analysis of data from surveys of distant galaxies, supernovae, and the cosmic microwave background radiation have made it possible to empirically constrain the major constituents of the Universe to unprecedented precision. Planned and ongoing research in all these areas require access to state-of-the-art computer hardware.

In anticipation of these developments, Harvard's Institute of Theory and Computation (ITC) was established at the Center for Astrophysics (CfA) in 2004. The mission statement of the ITC is to combine conceptual theory with computer modeling of the universe, to take advantage of the increased importance of computation in astrophysics and to train future generations of scientific and intellectual leaders in theoretical astrophysics.

Since its inception, the ITC has flourished and is now widely regarded as the premier institution for theoretical and computational astrophysics in the world. The ITC currently supports the research efforts of more than 100 scientists, including permanent members, postdoctoral fellows, and graduate students.

In addition, the ITC hosts visits of over 200 scientists from around the world every year, greatly enhancing the visibility of Harvard in all disciplines of astrophysics. A substantial component of all fellowships awarded by NASA worldwide were given to students and postdocs at the ITC.

The ITC has a dedicated computational facility to support the research of its members. Its council of senior members meeting every semester to discuss ITC policy and management issues.

The ITC is currently supported on a yearly basis by the Harvard College Observatory. We are seeking a permanent endowment of \$20-40M with an opportunity to name the ITC after the donor who provides these funds.

Yes, I accept your invitation to support the Institute for Theory and Computation!

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