

Computer Visualization of Black Holes from Supercomputer Simulations

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Physics and Astronomy

The work of the undergraduate in this project will involve numerical computations, color graphics and video animation. The project will focus on forefront problems in Theoretical Astrophysics and General Relativity, such as black holes, gravitational waves, relativistic neutron stars, and fluid flows. In particular, the undergraduate will build graphics software for the visualization of binary black holes in orbit about each other. The research group at Cornell is involved in calculating the inspiral and coalescence of two black holes in such a system as they lose energy by emitting gravitational waves. Such events are likely to be detectable by the LIGO gravitational wave detector now beginning to take data. The undergraduate will develop software to help study the output of these large-scale computer calculations.

Candidates for this position should be majoring in astronomy, physics or engineering physics and have a strong background in fundamental physics and mathematics. In addition, experience with computing is highly desirable. Students should be interested in continuing this research during the remainder of their undergraduate careers after the conclusion of the summer.