

Uncovering the Mysteries of Dark Matter in our Universe



Douglas Clowe
Associate Professor, Astronomy

CURRENT RESEARCH

Dr. Douglas Clowe uses gravitational lensing to study the basic structure of the universe

We do not know what 95% of the universe is made of however, we do know that somewhere in that 95%, dark matter and dark energy exist. Therefore, it has become of increasing interest for scientists to uncover what the universe is made of and how it has grown and evolved over the past 13 billion years. Dr. Douglas Clowe, of Ohio University, is studying the dark matter and dark energy within the structure of the universe. His primary research focus is in the field of observational cosmology where he uses the tool of gravitational lensing; a process in which massive structures bend, passing light with their gravity to focus the light, similar to a giant magnifying glass.

Using gravitational lensing, Dr. Clowe is able to study both the structure of galaxies and their surrounding dark matter. Distant galaxies are gravitationally lensed by nearby clusters of galaxies, which magnify galaxy populations that would otherwise be too faint to see. Dr. Clowe and his team have already had proven success through their discovery of the Bullet Cluster - consisting of two colliding clusters of galaxies. Understanding the structural mass of these galaxy clusters through gravitational lensing gives us information as to the nature of the dark matter that is holding the clusters together. By studying the relative magnifications of galaxy at different distances behind the cluster, we learn about how the universe is expanding and the dark energy that is driving that expansion. Through gravitational lensing, Dr. Clowe can uncover secrets of dark energy and dark matter. His continued research will focus on trying to improve the way that masses of galaxy clusters are measured, uncovering the acceleration of the rate of expansion of the...

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AFFILIATION

 Ohio University

EDUCATION

- B.S. in Physics 1993 ,California Institute of Technology
- M.S. in Astronomy 1996 ,University of Hawaii
- Ph.D. in Astronomy 1998 ,University of Hawaii

AWARDS

- Alfred P. Sloan Fellowship, 2008

RESEARCH AREAS

Environment, Atmospheric / Space, Space

FUNDING REQUEST

Your contributions will support the research of Dr. Clowe as he continues to study the basic structure of the universe in the hopes of learning more about dark matter and dark energy. Your donations will support the necessary \$400K per year to employ two postdoctoral scholars and three graduate students in addition to computers, publications, and travel. By donating to Dr. Clowe, you will be a part of further developing merging cluster studies with regular results that help us understand our universe.