Two galaxy clusters, each a quadrillion times the mass of the Sun, collided at speeds of millions of miles per hour. The hot gas in each cluster slowed down, but the dark matter did not. Hubble optical images were used to infer the distribution of the total mass, which includes dark matter seen as blue above. Chandra X-ray data enabled astronomers to accurately map the position of the ordinary matter, mostly in the form of hot gas, which glows brightly as pink in the image. The separation between the pink and the blue provides direct evidence for the existence of dark matter. IFA astronomer Harold Ebeling discovered this cluster during the MACS survey.

Clusters of galaxies, the most massive things in the Universe, are the first places where scientists found dark matter, the mysterious, unseen material that is the majority of matter in the Universe. About forty years ago, astronomers discovered that galaxy clusters are very bright X-ray sources. Prof. Henry will explain how studying X-rays produced by these clusters provides insights into dark matter. He will also talk about his adventures and misadventures while building and flying instruments used to make these studies.

Tuesday, September 30, 2008
7:30 p.m.
Mānoa Valley Theater
2833 East Mānoa Road
Free Admission
Open to the Public

www.ifa.hawaii.edu