

# Amateurs Help Astronomers Unravel A Propeller Star

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Amateur astronomers are being asked to help a constellation of observatories unravel the mysteries of a puzzling binary star system.

On August 30-August 31, 2005 two space-based and four professional ground-based observatories are scheduled to observe the cataclysmic variable star AE Aqr. Each of the observatories covers a different wavelength of light and amateur astronomers have been asked to help cover the visible-light portion.

"This observing campaign will take place over nearly a full day, and since no single ground-based observatory can observe AE Aqr for that long due to Earth's rotation, amateur astronomers can make a unique and invaluable contribution to this campaign," said Dr. Christopher Mauche of Lawrence Livermore National Laboratory, the principal investigator of the project.

Because they are spaced all across the globe, amateur astronomers can observe this star and other celestial objects unhindered by nightfall or weather.

The Chandra and GALEX space telescopes will be working with the HESS, MAGIC, VLT, and VLA ground-based telescopes. Combined, they will provide coverage of AE Aqr from high-energy gamma-rays to low-energy radio waves.

Such simultaneous multiwavelength coverage is required to provide the

clearest picture of the locations, mass motions, energetics, and inter-relationships of the various emission regions in the star.

AE Aqr is an intermediate polar, a type of cataclysmic variable star. It actually consists of two stars - a red dwarf and rapidly spinning magnetic white dwarf.

Material drawn off the red dwarf falls toward the white dwarf, but instead of landing on the white dwarf surface, it is flung out of the system by the white dwarf's rapidly spinning magnetic field. This mechanism, which is uncommon but not unique to AE Aqr, is referred to as a magnetic propeller.

"Amateurs astronomers have been observing AE Aqr since 1944. Since then, they have recorded over 28,815 measurements of the star, most of them made with just a telescope and their eyes. This type of historical data is immensely valuable in studying variable stars and only amateurs can provide it," Dr. Arne Henden, Director of the American Association of Variable Star Observers (AAVSO), said.

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