



**DARK RIDGE  
OBSERVATORY  
WEED, NEW MEXICO  
LOCATION**

**Future plans for the Dark Ridge Observatory  
include but are not limited to**

The Dark Ridge Observatory future plans include but are not limited to continued scientific research in collaboration with local and remote state colleges and universities as well as remote collaboration with California's Cuesta College, Cal Poly San Luis Obispo and Hawaii's Maui Community College.

A program to design and build "Space-age" research Alt-Az telescopes and deploy them at Dark Ridge Observatory for remote research is in the planning stages.

Observatory programs will be extended and include a visiting observer program as well as possible remote research capabilities.

## **DONATIONS**

We gladly accept donations to help support the mission. All donations are tax deductible.

Donations are accepted as follows:

Checks—payable to Dark Ridge Observatory.

PayPal from our website—  
[www.darkridgeobservatory.org](http://www.darkridgeobservatory.org)

Equipment, materials, supply donations contact [djsmith@darkridgeobservatory.org](mailto:djsmith@darkridgeobservatory.org)

EIN: 20-4945289

**Thank you for your support.**

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# **Dark Ridge Observatory, Inc.**

**a 501(c)(3) tax-exempt, non-profit,  
scientific research and educational  
charitable organization**



**"HIGH ON THE RIDGE AND HIGH  
ON ASTRONOMICAL RESEARCH  
AND EDUCATION"**

[www.darkridgeobservatory.org](http://www.darkridgeobservatory.org)

# DARK RIDGE OBSERVATORY AT A GLANCE



**14" MEADE LX-200 GPS  
TELESCOPE IN USE BY DARK  
RIDGE OBSERVATORY**

Dark Ridge Observatory is located near Weed, New Mexico. This site, at 7200 feet elevation, is ideally suited for astronomical observations. Work has been instituted to make observations from this location available to student and other researchers from around the country utilizing the multiple telescopes that will be available through the Dark Ridge Observatory.

Dark Ridge Observatory began its existence in Atascadero, CA when a 14" Meade LX-200GPS telescope was purchased in 2003 and was equipped with a sensitive research camera (SBIG ST-7 with photometric filters). A roll-off-roof enclosure was built for this telescope. The roof was motorized and could be operated remotely, as could the telescope and all supporting equipment. This system was brought to a full operational status in May of 2004, and had been in operation nearly every clear night since then, gathering valuable scientific photometric data. Cuesta College, in San Luis Obispo, purchased a similar telescope, and the Dark Ridge Observatory was instrumental in bringing it to a fully operational status. Dark Ridge Observatory relocated to New Mexico in April 2007.

## **Eclipsing binary star research:**

For the past four years, the Dark Ridge Observatory has been observing two very special eclipsing binary stars. These stars are so close to each other they are actually in contact, and they whirl

around each other in about five hours, eclipsing each other in turn as they do so. Dark Ridge Observatory is monitoring these unusual eclipsing binaries for changes in eclipse timing indicative of possible planets in orbit around these stars, and is also monitoring these stars for changes in the positions of giant dark spots on one side of these pairs of stars.

## **Dark Ridge Observatory publications:**

Numerous publications and presentations have been made with respect to the research on eclipsing binaries at Dark Ridge Observatory. These include a presentation at the 2004 annual meeting of the American Astronomical Society (in San Diego, reference *Bulletin of the American Astronomical Society 205th Meeting: [18.03] CCD Photometry of the Eclipsing Binary V523 Cassiopeia*), a presentation at the annual meeting of the American Association of Variable Star Observers in Las Cruces, New Mexico, in March of 2004 (paper published in the *Journal of the American Association of Variable Star Observers, Changes in the Light Curves of Short-Period W Ursae Majoris Binaries: Program Summary*), a presentation in Monterey, California at the American Astronomical Society's Division of Planetary Sciences about how planets might be detected around binary stars due to changes in eclipse timing. Visits with other researchers have been made, such as with Laurance Doyle at the SETI Institute in Mt. View, California. Observations have been made at other observatories, such as a several-night observational session at the Vatican Observatory's large (72-inch) telescope.

## **Educational outreach and student research at Dark Ridge Observatory:**

A vital aspect of the mission of Dark Ridge Observatory is helping students with their own astronomical research. Several Cal Poly and Cuesta Community College students have been involved in research at Dark Ridge Observatory

and Dark Ridge Observatory has assisted in telescope time as well as countless hours of data analysis in support of student publications as well as their senior projects. One student earned a Masters and another earned a Bachelor from Cal Poly as a result of these efforts.

## **New breaking research rolls it all together:**

A major recent project was providing technical, observational, and data reduction support for three students at Cuesta College in San Luis Obispo, California. These three students, who were taking a physics research seminar, chose, as their research project, to observe potentially variable stars suggested by the Global Network of Astronomical Telescopes (GNAT) directed by Eric Craine and headquartered in Tucson, Arizona. The students discovered two pulsating variable stars. Their results have been presented to astronomers at the 2007 annual meeting of the American Astronomical Society in Seattle, Washington, and have been submitted to the *Journal of the American Association of Variable Star Observers* for publication. Dark Ridge Observatory was instrumental in teaching these students how to make photometric observations, how to reduce their data, and how to present their results. Other student works included a study of several "neglected" double stars to be published in the *Journal of Double Star Observations* (JDOS).

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