

## Virtual Telescope for X-ray Observations

*New Mexico State University/NASA Goddard Space Flight Center, Science Mission Directorate, International Space Station*

### *Tiny Satellites Doing Big Things*

New Mexico State University, the University of New Mexico and NASA's Goddard Space Flight Center are teaming to find a way for two CubeSats, toaster sized spacecraft, to work together to produce big science. The Virtual Telescope for X-ray Observations (VTXO) mission is developing the next generation X-ray telescope using a diffractive optics lens and a high-tech camera sensitive to X-rays. The lens is based on the design of a Fresnel lens, often seen added to the rear windows of RVs, but modified to work with X-rays. This type of lens offers superior resolution but requires a focal length, lens - camera distance, longer than a football field. To work around this physical challenge, VTXO will divide the telescope over two satellites with one carrying the lens and the second a camera. The two satellites must be precisely controlled to maintain alignment not only with each other but with a distant X-ray source. When completed, the VTXO Mission will provide a much clearer view for astrophysicist to study X-ray sources in the Universe. Much of the work for VTXO is performed by students from New Mexico, who are getting the opportunity to be at the forefront of NASA sponsored innovation. ✨



*Schematic showing the alignment of the imager-satellite with the optics-satellite. The direction of the X-ray source target would be along the line of sight between the two satellites and out of the paper.*



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