

Fisher Fellowship Award for 2005-2006

Mary Kertzman, Professor of Physics and Astronomy - (Spring) "The First VHE Gamma Ray Sky Survey With the Whipple 10m Telescope."

Abstract

Ground based very high energy gamma ray telescopes have exclusively been operated in a point source mode; they are pointed towards a known or suspected emitter of gamma rays. Due to the small field of view of these instruments, conducting a search for unknown sources over a large area of sky was thought to be an unproductive use of limited telescope time, and has in general been put off until the next generation of large field instruments. However, I have developed a technique to use the data from nightly calibration runs to form a sky survey. Each night of operation of the Whipple 10m Gamma Ray Telescope, a ten minute run is taken with the telescope pointed towards zenith. Over four years of operation, these "zenith runs" collectively have observed a narrow strip which completely covers the sky. This strip covers approximately 3.5% of the sky, and is roughly equivalent to the area covered by all our normal pointed observations. I am searching for hitherto unknown gamma ray sources in this area. For this fellowship, I propose to complete my analysis of the first sky survey strip and submit a paper on the results to a major journal, such as *The Astrophysical Journal*. This study is the first systematic sky survey conducted in very high energy (VHE) gamma rays.