



Contribution ID: 27

Type: Oral

## The Galactic Annihilation Line Explorer (GALE) ULDB Pioneers Experiment

Wednesday 14 May 2025 11:45 (25 minutes)

The Galactic Annihilation Line Explorer (GALE) mission will address a long-outstanding question in our understanding of the sources of Galactic positrons: whether they are produced by unresolved astrophysical sources or created via diffuse processes, possibly due to dark matter decays and/or interactions. This problem of Galactic positrons that produce 511-keV gamma-ray emission from the Galactic plane and Galactic Center has existed for years and is well-defined with the measurements by INTEGRAL/SPI. GALE is designed to achieve the needed angular resolution (fraction of a degree) and point source sensitivity ( $< 10^{-4}$  ph/cm<sup>2</sup>/s) required to understand the 511-keV emission structure in the Galactic Center. The GALE instrument combines a coded-aperture mask (CAM) with a cadmium-zinc-telluride (CZT) imaging calorimeter (ImCAL) to form a combined CAM/Compton telescope. The ImCal is based on the design used in the successful ComPair-2023 balloon mission where its performance was demonstrated. The Wallops Arc-Second Pointer (WASP) support system will be used to achieve the precise telescope pointing control required for the GALE pointing to the GC and for the coded aperture imaging operation. In this talk, the science goals, GALE instrument design, anticipated performance and mission will be discussed.

### Eligibility for "Best presentation for young researcher" or "Best poster for young researcher" prize

No

**Authors:** CANNADY, Nicholas (NASA GSFC); DUTRA VASCONCELOS DOS SANTOS, Maira (NPP/GSFC); GHOSH, Priyarshini (NASA Goddard Space Flight Center); GONZALEZ, Francisco (ORNL); HARTMANN, Dieter (Clemson University); KARWIN, Christopher (NPP/GSFC); KIERANS, Carolyn (NASA GSFC); KRIZMANIC, John Francis (NASA-Natl. Aeronaut. & Space Admin. (US)); LAURENT, Philippe (CEA Paris-Saclay); MITCHELL, John; MOISEEV, Alexander; ONATE-MELECIO, Karla (NRL); PARSOTAN, Tyler (NASA/GSFC); PHLIPS, Bernard (Naval Research Laboratory); PROFUMO, Stefano (University of California, Santa Cruz); SASAKI, Makoto (University of Maryland, College Park); SHY, Daniel (Naval Research Laboratory); SMITH, Lucas (University of Maryland, College Park); STEINHEBEL, Amanda (ORNL); THOMPSON, David (NASA Goddard Space Flight Center); TIAN, Lucia (NASA/GSFC); TOMSICK, John (Space Sciences Laboratory / University of California, Berkeley); Dr WADIASINGH, Zorawar (NASA GSFC); WOOLF, Richard (Naval Research Laboratory); ZIOCK, Klaus-Peter (ORNL); ZOGLAUER, Andreas (UC Berkeley)

**Presenter:** KRIZMANIC, John Francis (NASA-Natl. Aeronaut. & Space Admin. (US))

**Session Classification:** Instrumentation and missions for direct X-ray and gamma-ray measurements