prop_num	pi_fname	pi_lname	Title	Abstract
171001	MICHAEL	COUGHLIN	THE LOW-LATENCY GRAVITATIONAL-WAVE ALERT SYSTEM ENABLING FERMI GBM FOLLOW-UP	With the detection of compact binary coalescences and their electromagnetic counterparts by gravitational-wave and gamma-ray burst detectors, a new era of multi-messenger astronomy has begun. In this proposal, we demonstrate how we are developing software to combine Fermi GBM with gravitational wave data to make gamma-ray burst detections at a rate not seen in the past. We describe how improvements to the low-latency gravitational-wave technical alert system will improve ongoing searches for joint gravitational wave and gamma-ray burst candidates, growing the potential for multi-messenger astronomy.
171013	SLAVKO	BOGDANOV	UNCOVERING AND CHARACTERIZING FERMI-SELECTED REDBACK MILLISECOND PULSARS	Redbacks are a recently recognized class of eclipsing binary millisecond pulsars that appear to be an evolutionary link between "recycled" radio millisecond pulsars and their low-mass X-ray binary progenitors. We request support to continue the successful comprehensive multiwavelength program to identify and characterize redback binaries in unassociated Fermi LAT sources, discover their radio and gamma-ray pulsations, and obtain phase-connected timing solutions. This effort will lead to improved understanding of the peculiar phenomenology of these systems, Galactic MSP demographics, and compact binary evolution.
171028	STEFANO	GIARRATANA	RADIO-BRIGHT VS RADIO-DARK: TESTING SUB-POPULATIONS IN LONG GRB AFTERGLOWS	It has been shown that only 31% of long Gamma-Ray Bursts (GRBs) have a detected radio afterglow: while some authors ascribed this detection rate to the sensitivity of radio facilities, others claimed that some GRBs may be intrinsically radio-dark, with deep implications on the progenitor nature and/or the microphysics of the afterglow. However, these results suffer from several systematic effects, as GRB samples are incomplete and non-uniform. We propose to build the first uniform sample of GRBs with gamma-ray and radio information: to do so, we require a VLA follow-up of up to 10 GRBs detected by Fermi/GBM and with a confirmed redshift. Are there radio-dark/bright GRBs? If so, is it due to a different progenitor? The proposed campaign is the first step to answer these questions.

171035	BRIAN	METZGER	CONNECTING THERMAL AND NON-THERMAL EMISSION FROM SHOCKS IN NOVAE	The discovery by Fermi LAT of GeV gamma-rays from classical novae illustrates that shocks and high energy particle acceleration are common in nova outflows. Local simulations of radiative shocks in novae will be further extended to global 2D and 3D simulations of the shock interaction in these systems and their multi-wavelength emission. Motivated by particle-in-cell simulations, the inclination angles across the shock front relative to the upstream magnetic field we be used also predict the average particle acceleration efficiency and compare to those observed. Our work will connect the LAT gamma-ray emission to the thermal and non-thermal X-ray emission from novae detected by Swift and NuSTAR.
171063	ALBA	RICO RODRIGUEZ	A NEW METHOD TO OPTIMIZE THE SEARCH FOR PERIODICITY IN BLAZARS	Recent studies have suggested the existence of periodic signals originating from blazars in gamma rays. However, periodicity analysis has ongoing challenges, such as dealing with noise and trends. To address these issues, we propose using the "Singular Spectrum Analysis" method for the first time in astrophysics periodicity analysis. This method enhances the periodicity search by eliminating noise and trends. We will apply this new method to the known variable blazars in the 4FGL-DR4 to detect new periodic blazars that other systematic studies (using traditional methods) missed. Additionally, systematic forecasting of the future behavior of the sources will be performed.
171065	WENLEI	CHEN	EXPLORING POLARIZATION SIGNATURES IN GAMMA-RAY BURSTS THROUGH FERMI-GBM OBSERVATIONS OF EARTH'S GAMMA-RAY ALBEDO	Studying the polarization of GRBs not only deepens our understanding of the physical conditions and processes driving these powerful events but also tests fundamental physics and enhances our knowledge of the universe's extreme environments. In the MeV regime, the Compton scattering of linear polarized gamma-rays exhibits an azimuthal asymmetry, as described from the analytic expression of Klein-Nishina differential cross section. Our preliminary simulations indicate that polarized GRBs could produce such an asymmetry in the Earth s gamma-ray albedo. In the proposed study, based on a comprehensive simulation of atmosphere-GRB interactions for various choices of GRB and polarization parameters, we plan to analyze the archival Fermi-GBM data of a number of GRBs to explore their polarization

171078	CECILIA	CHIRENTI	A SEARCH FOR QUASIPERIODIC OSCILLATIONS IN SHORT GAMMA RAY BURSTS DETECTED BY FERMI/GBM	Short gamma-ray bursts (SGRBs) have been associated with binary neutron star mergers. The end result of such a merger can be a stable neutron star, a millisecond magnetar that collapses to a black hole or direct collapse to a black hole. The detection of quasiperiodic oscillations (QPOs) in SGRBs, recently achieved by a timing analysis within a rigorous Bayesian framework, could provide clues to the SGRB progenitor. High-frequency QPOs, reported in two BATSE SGRBs, are consistent with the millisecond magnetar remnant scenario. A low-frequency QPO, preliminarily identified in a recent GBM GRB, is consistent with, e.g., a magnetar crustal mode or Lense-Thirring precession. Here we propose a thorough search for QPOs in the Fermi catalog and current data.
171085	ALBA	RICO RODRIGUEZ	THE 4FHL CATALOG: A NEW CENSUS OF THE >50 GEV SKY	The proposal is to construct a new hard-source gamma-ray catalog above 50 GeV, designated as the 4FHL. It aims to expand on the success of previous Fermi-LAT catalogs, particularly the 2FHL, by utilizing a significantly larger dataset (2.4 times more data, covering 16 years). The focus is on very high-energy (VHE) gamma-ray sources, with an expectation of identifying over 850 sources. The methodology involves an "unbinned" maximum likelihood algorithm for data analysis, enhancing sensitivity to faint sources and better source localization. The 4FHL catalog is anticipated to contribute significantly to high-energy astrophysics, complementing the work of TeV telescopes like CTA, HAWC, and LHAASO and aiding in studying cosmic rays, dark matter, and other astrophysical phenomena.

171088	IOANNIS	LIODAKIS	UNCOVERING THE KNOWN UNKNOWNS OF THE GAMMA-RAY UNIVERSE	Despite Fermi's excellent localization capabilities, a significant fraction of the detected gamma-ray sources remain unclassified. Here, we propose to rectify this by employing a multi-layered search for lower-energy counterparts. We will use the unique capabilities of the hard X-ray telescope ART-XC supplemented with soft X-ray observations (Swift, Chandra, XMM) to identify X-ray bright sources within the unidentified Fermi objects' (UFO) positional uncertainty. Guided by the much more accurate X-ray positions we will exploit time-domain surveys (ZTF, CRTS, ASAS-SN, DES, PanSTARRS) and public data from multiple all-sky surveys (Gaia, WISE, 2MASS). This rich dataset will allow us to differentiate between blazars and pulsars as well as uncover more exotic gamma-ray sources.
171093	MICHELA	NEGRO	ON THE LARGE SCALE ENVIRONMENT OF GAMMA-RAY BL LACS	The gamma-ray sky is dominated by a class of extragalactic sources known as BL Lacs, the largest population of associated gamma-ray sources. Unfortunately due to their nature and the fact that their optical spectra appear almost completely featureless, redshift measurements for this source class has always been an extremely challenging task. The lack of redshift estimate strongly affects many investigations on this enigmatic population. Given the recent discovery that BL Lacs inhabit galaxy-rich large-scale environments, being members of groups and/or small galaxy clusters, here we propose to extend these statistical analyses at larger redshifts and develop a new method to derive redshift estimates for BL Lacs using their companion galaxies.
171098	AMY	LIEN	SEARCHING FOR THE MISSING LINK BETWEEN SHORT AND LONG GRBS WITH THE CITIZEN SCIENCE PROJECT BURST CHASER	The long/short classification is commonly adopted to infer the physical origins of GRBs. However, the distinction between these two groups remains ambiguous. Several studies in recent years have found examples that directly challenge this traditionally adopted methods. These confusing cases reveal the need to revisit the pulse structures and to better understand the occurrence frequency of these events. Recently, a citizen science project, the Burst Chaser, has been launched to perform a large-scale systematic study on pulse structures with GRBs from the Swift/BAT. We propose to add GRBs from Fermi/GBM to the sample, which will increase the current sample size on Burst Chaser by over 3 times.

171100	PABLO	SAZ PARKINSON	TARGETED SEARCHES FOR YOUNG G-RAY PULSARS IN UNASSOC. FERMI-LAT SOURCES, USING EROSITA ARCSEC-LEVEL X-RAY COUNTERPARTS	The Fermi Large Area Telescope (LAT) has discovered approximately 300 gamma-ray pulsars, a significant portion of which were found through blind searches. However, detecting young energetic pulsars is challenging due to timing noise and glitches. The eROSITA all-sky survey, the most comprehensive X-ray survey since ROSAT, three decades ago, has identified numerous X-ray counterparts for potential rotation-powered pulsars. Our proposal involves conducting targeted blind pulsar searches for the top ∼40 young energetic candidates identified in the eROSITA survey. Utilizing the precise X-ray counterpart positions, we can significantly reduce the search areas, and data spans, thus significantly enhancing the sensitivity of our searches.
171108	MARCO	AJELLO	FERMI-LLM: A LARGE LANGUAGE MODEL FOR THE ANALYSIS OF FERMI-LAT DATA *(large Project)*	Generative AI systems like chatGPT and Bard have revolutionized the way people work. With this program, we want to bring this revolution to astrophysics and, in particular, to Fermi. We propose to create Fermi-LLM, a large language model that will allow any user (also those without any previous experience) to analyze data from Fermi-LAT by using natural language prompts. Moreover, our vision to have a self-contained system that runs on the team s high-performance computing cluster will remove all the barriers (related to installing software, downloading data, etc.) to analyzing and interpreting data from the Fermi mission. This program has the potential to significantly enhance the Fermi mission by dramatically enlarging the user base and promoting public engagement.

171112	ORE	GOTTLIEB	LARGE-SCALE SIMULATIONS OF LONG-LIVED NEUTRON STAR REMNANTS FROM BINARY NEUTRON STAR MERGERS	This study investigates the central engine of short gamma-ray bursts (sGRBs) in light of recent discoveries of long gamma-ray bursts (GRBs) originating from binary mergers. While it has been shown that long GRBs stem from black holes (BHs) with massive disks (Gottlieb et al. 2023), the central engine for standard sGRBs remains elusive. This research aims to address this gap through first-principles simulations, focusing on long-lived hypermassive neutron stars (HMNSs) as potential engines for sGRBs. However, the extended lifetime of HMNSs presents numerical challenges. Using state-of-the-art simulations, we will explore the scenario in which the prompt emission in sGRBs arises from HMNSs, with later-formed BHs driving extended emission (EE) in the magnetically arrested (MAD) state.
171117	ANDREA	GOKUS	RECURRENCE ANALYSIS OF BLAZAR JETS WITH LONG-TERM MONITORING DATA FROM FERMI-LAT	In the Astro2020 Decadal survey, time-domain astrophysics is highlighted as one of the most essential areas to further the exploration of space. By making use of the superb monitoring capability of Fermi-LAT, which has been observing the γ-ray sky since 2008, we propose to conduct a variability study of blazars using recurrence plot analysis. This method provides advanced tools to gain insight into the non-linear and stochastic behaviour of blazar jets at the highest energies. With our proposed program, we will investigate the underlying acceleration mechanisms in jets and systematically probe potential intrinsic differences in blazar types.
171119	LAURA	CHOMIUK	WHAT DETERMINES THE GAMMA-RAY LUMINOSITY OF A NOVA?	We propose to collect diverse gamma-ray, optical, and radio data on novae that have erupted over the lifetime of Fermi, in order to test what nova properties determine the GeV gamma-ray luminosity (which varies across novae by at least two orders of magnitude) and duration of gamma-rays (which can last for 1--60 days). We will compare the gamma-ray properties with optical spectroscopic measurements (which constrain the velocity of the ejecta and the shock) and radio light curves (which constrain the ejecta mass), to ultimately test how the energy of the nova ejecta is transferred to gamma-rays. We also request VLA monitoring, A configuration imaging, and VLBA imaging of one newly discovered and Fermi-detected nova, in order to grow the sample of novae where both the thermal ejecta and syn

171120	OLIVER	ROBERTS	GOOD VIBRATIONS: SEARCHING FOR QUASI-PERIODIC SPECTRAL OSCILLATIONS IN MAGNETAR BURST SPECTRA	A possible 42~Hz (24~ms) QPO in the vFv spectrum peak energy (Ep) was recently discovered for two SGR 1935+2154 bursts, the first ever report of a quasi-periodic spectral oscillation (QPSO). This proposal will search for additional QPSOs in the Fermi-GBM data of two of the most prolific magnetars of the Fermi era; SGR 1935+2154 and SGR 1550-5418. We will derive physically motivated, accurate descriptions of magnetar burst spectra envelopes to search for QPSOs in both magnetars and, for the first time, constrain the QPSO rate of occurrence and distribution of frequencies in an effort to constrain the magnetospheric environment of each system, enabling us to explore if/how these magnetars depend on global properties.
171123	DEMOSTHENES	KAZANAS	BLAZAR CURRENT SHEETS AS SOURCES OF COLLIMATED GAMMA-RAYS AND NEUTRINOS	We propose a study of proton acceleration and associated radiation in blazar current sheets (CS), in analogy with e+e- acceleration and radiation in the pulsars CS. As with the pulsed pulsar gamma rays, the blazar CS radiation is detected when the CS cross the observers LoS. Its special characteristic is the production of neutrinos, which though modest, is emitted at a very small solid angle to produce the observed flux on the Earth when their CS acquire a favorable orientation. We propose to compute the CS proton acceleration and the resulting neutrino spectra and fluxes as a function of the underlying blazar parameters and position of the observer. We will compare our results to the Ice Cube neutrino and Fermi LAT fluxes to estimate the neutrino producing blazar population.

171128	MICHAEL	FAUSNAUGH	MONITORING OF GAMMA-RAY BURSTS BY FERMI AND TESS *(Large Project)*	This proposal is to create a monitoring, follow-up, and analysis program for Fermi-GBM GRBs that land in the TESS fields of view over the next 3 years (2024 to 2027). By identifying these GRBs with TESS data, we will compile a unique sample of GRBs with multiwavelength observations of the initial GRB emission and jet properties. We will also search for optical counterparts of Fermi GRBs in TESS archival data, from the time that TESS began science operations in 2018. Over the total 9-year Fermi+TESS observing period, we expect to find 50-60 GRBs with overlapping observations, doubling the current sample. The combined Fermi-TESS GRB sample will be an important legacy dataset, because simultaneous multiwavelength observations of this kind are nearly impossible to obtain otherwise.
171132	JAMES	DELAUNAY	A JOINT SWIFT/BAT AND FERMI/GBM GRB SEARCH	The dim nature of the off-axis GRB 170817A that was detected in coincidence with gravitational waves has driven the need for more sensitive GRB searches. Here we propose the development of a joint, coherent targeted search using data from the two most sensitive GRB monitors, the Fermi Gamma-ray Burst Monitor and the Swift Burst Alert Telescope. Leveraging the combined sensitivities and uncorrelated background of the two instruments, this will be the most sensitive analysis to GRB-like bursts, and provide the largest detection horizon to off-axis GRBs like GRB 170817A. This search will also provide a boost in sensitivity to searches for gamma-ray counterparts to high-energy neutrinos and fast radio bursts.
171134	MIKHAIL	MALKOV	UNDERSTANDING GAMMA-RADIATION AND GEV PROTONS ASSOCIATED WITH CME SHOCKS	Fermi-LAT and GBM instruments provide crucial evidence of GeV proton acceleration during CME events, thus warning us about their possible soon arrival in the Earth's environment. However, the detection of accelerated protons is indirect, only occurring after they strike the Sun's thick target in its photosphere and lower chromosphere. The goal of this proposal is to establish a link between the gamma-radiation emitted by this part of accelerated protons and the flux of their counterparts escaping the shock toward 1 au. To predict their number by measuring the gamma-emission, we propose a targeted theoretical study of proton acceleration and subsequent propagation focused on such predictive capability.

171140	DANIEL	KOCEVSKI	THE FERMI LAT LIGHT CURVE REPOSITORY	We propose to further develop and operate the Fermi LAT light curve repository (LCR), consisting of a public library of light curves for variable LAT sources on a variety of timescales. The LCR provides publication quality light curves on timescales of days, weeks, and months for over 1500 sources deemed variable in the 4FGL-DR2 catalog. We propose to continue developing the LCR by expanding the available data overlays available to users, making the LCR a true TDAMM data portal for not only flaring AGN, but for a more diverse range of astrophysical events and sources. These enhancements will enable the community to access information on gamma-ray bursts, neutrino detections, solar flares, gravitational wave detections and more, all within the LCR interface.
171144	ANUVAB	BANERJEE	GRBS AS COSMIC PROBES OF THE ULTRAVIOLET AND OPTICAL BACKGROUND	A proper knowledge of the extragalactic background light (EBL) is key to understand the star formation history of the Universe and galaxy evolution. In this proposal, we plan to use gamma-ray bursts (GRBs) as probes of EBL, due to their comparative advantage over BL Lac sources. We will use all the GRBs that Fermi-LAT has detected, that have a redshift measurement. Five sources within our sample being TeV detected, would allow us to constrain the near-Infrared region of the EBL.
171148	KAYA	MORI	PROBING THE ORIGIN OF HIGH-ENERGY EMISSION FROM THE GLOBULAR CLUSTER TERZAN 5	Among ~150 known globular clusters in our galaxy, Terzan 5 hosts the largest number of 38 milli-second pulsars (MSPs) and stands out as the only one detected in the TeV band. The unique presence of extensive radio, X-ray, and TeV emission indicates a population of relativistic electrons escaping from their primary accelerators (MSPs and spider pulsars) within the cluster core. The proposed LAT analysis and SED modeling will allow us to resolve the GeV emission spatially/spectrally and detect a diffusive ICS component in the GeV band from a globular cluster for the first time. Our multi-wavelength investigation will determine how relativistic particles propagate outside the cluster while cooling radiatively, and provide an important clue to the MSP-origin of the Galactic Center GeV excess.

171156	MARCOS	SANTANDER	ENABLING PROMPT IDENTIFICATIONS OF ELECTROMAGNETIC COUNTERPARTS TO HIGH-ENERGY NEUTRINOS WITH FERMI-LAT	The identification of a joint gamma-ray and neutrino source would represent a smoking gun signature of cosmic ray acceleration. The first tantalizing correlation between both channels was enabled by Fermi-LAT with the identification of the flaring blazar TXS 0506+056 coincident with the IceCube neutrino event IC170922A, which triggered an intense multiwavelength campaign. We here propose to complete the development of an automated pipeline to promptly identify potential gamma-ray counterparts to neutrino events and post the results of this search to the community to help enable additional follow-up observations.
171164	OLEG	KARGALTSEV	CLASSIFICATION OF 4FGL SOURCES WITH CHANDRA SOURCE CATALOG V2.1 AND MULTIWAVELENGTH SURVEYS	We aim to unveil the nature of particle accelerators in unidentified Galactic gamma-ray sources, using a comprehensive, automated multi-wavelength (MW) machine-learning analysis of the fields of 4FGL sources with coverage in Chandra Source Catalog 2.1. Chandra provides accurate X-ray source positions and X-ray properties for sources in 226 unIDed 4FGL-DR4 source fields. We will also make use of high-quality radio and optical/IR data from recent surveys. We expect to (1) increase the numbers of identified GeV sources, (2) isolate a fraction of gamma-ray sources without plausible counterparts at other wavelengths, (3) gain insight into the particle acceleration processes in gamma-ray sources, (4) classify a large number of Galactic X-ray sources.
171166	CALEB	WHEELER	ENHANCING THE RETURN OF GBM DATA WITH THE INTERPLANETARY NETWORK	The Interplanetary Network (IPN) accumulates gamma-ray burst monitor data for a worldwide community. We propose supporting this critical science infrastructure with a student-led program to develop software that directly engages IPN contributors and users. Student-led projects will significantly enhance the existing IPN software elements by 1) refining event triangulation with additional calculations that consider specific cases, as well as 2) creating dashboard views to expedite access for all critical data associated with an event. Students in this program will learn/invest in skills relevant to academic and professional software development tracks that will broaden their career paths while directly contributing to the field in a low-risk, dynamic environment.

171169	NAMIR	KASSIM	UNVEILING MILLISECOND PULSARS RESPONSIBLE FOR THE FERMI GALACTIC CENTER GEV EXCESS	Theory and observations predict a large population of Galactic bulge millisecond pulsars (MSPs). The Fermi GeV excess, interpreted as the collective gamma-ray emission from faint MSPs reinforces this hypothesis. Nonetheless, after >15 years the putative MSPs remain elusive, sustaining dark matter (DM) self-interactions as an alternative explanation. Based on MeerKAT radio imaging and multi-wavelength MSP identification, we propose 48 hours on the GBT to follow-up 21 excellent candidates. Detections would be a major leap forward in deciphering the excess and shed light on its potential DM contribution; it would also refine estimates of the Galactic electron density and the stochastic gravitational wave background. An exciting new MSP was just detected following the logic of this proposal.
171176	SAJAN	KUMAR	SYSTEMATIC STUDY OF THE RADIO-DIM, GAMMA-RAY BRIGHT SNR POPULATION TO TEST EVOLUTIONARY MODELS	We propose a systematic study of gamma-ray emission from nearby, large-diameter SNRs located in the outer galaxy and at high latitudes. The sensitivity of Fermi-LAT has reached an interesting level outside the Galactic plane where there is less diffuse emission and source confusion. We have identified two new LAT SNRs, which will be studied in detail, and will set meaningful upper limits on a sample of ~40 Galactic SNRs that are predicted to have detectable LAT emission based on evolutionary modeling of different SN types. This work will provide a comprehensive understanding of nonthermal emissions from SNRs with different SN progenitor types, ambient environments and ages, within 2 kpc.
171179	LORENZO	SCOTTON	SIGNIFICANCE OF THE LOW ENERGY BREAK IN THE PROMPT EMISSION SPECTRA OF FERMI GRBS: A TEST FOR SYNCHROTRON THEORY	Synchrotron radiation is a natural candidate to account for the non thermal shape of gamma ray bursts (GRBs) prompt spectra. However, spectral fits of phenomenological functions often violate expectations based on synchrotron theory. Recent studies found that including a low energy break in the fitting models helps to bridge this gap. We propose to look for, and to assess the significance of, a low energy break in the broadest available sample of gamma ray bursts observed by the Fermi GBM in 15 years of operations. Such a systematic analysis will deliver evidence for the presence or absence of a low energy break. This will either reinforce the synchrotron interpretation of the GRB prompt emission, or indicate that new solutions should be found to match observations with theory.

171180	MARK	LEISING	NEW FERMI GBM ANALYSES OF BRIGHT SOURCES AND THE ISOTROPIC DIFFUSE BACKGROUND	We have developed a system to analyze Fermi GBM spectra by fitting source responses and instrumental background components to cspec data. In preliminary applications, we find that it recovers well known bright source spectra on average, and generally separates the large background spectra from sources. This is more successful with GBM NaI detectors because of their greater number, and higher source fluxes relative to background. We propose to improve the background modeling, and apply this method for monitoring known sources, searching for new ones, and for measuring diffuse emission.
171181	THANKFUL	CROMARTIE	RADIO OBSERVATIONS OF FORGOTTEN SPIDERS FOR THE FERMI PULSAR TIMING ARRAY	Both radio and gamma-ray pulsar timing array (PTA) experiments have made monumental strides towards constraining the nHz gravitational background in the last year. Although traditionally not included in PTAs due to their eclipses and orbital period variations (OPVs), spider MSPs have slowly been added to radio PTAs and constitute a sizable portion of the best gamma-ray timers. We propose to time six spider MSPs over one year with the GBT in order to better understand the nature of these OPVs, their effect on measurements of timing noise and ISM variations, and the impact that modeling them has on gravitational wave sensitivity. A total of 48 hours are requested using the GBT 820 MHz and L-band receivers alongside the VEGAS backend, or the Ultra-Wideband Receiver if it becomes available.
171182	DEMOSTHENES	KAZANAS	CRAB NEBULA FLARES AND VARIABILITY: A CORRELATED VIEW	We propose a correlative study between the variations of the Crab nebula Fermi-LAT flux (the ``Crab flares") and the nebular X-ray fluctuations monitored by Swift BAT. We argue, in terms of a simple model, that the impulsive injection of high energy electrons needed to produce the observed Fermi LAT flares results in the nebular X-ray fluctuations detected by a series of instruments, including Swift BAT. We plan to employ recently released public software to follow the BAT nebular X-ray variations and correlate them to those of Fermi LAT in order to test this model. Confirmation of such a correlation will provide significant constraints on the physics of particle injection and their evolution in the Crab pulsar nebula.

171185	SCOTT	JOFFRE	NEW VARIABLE GAMMA-RAY PULSAR WIND NEBULA CANDIDATES DETECTED WITH FAVA	The Crab's pulsar wind nebula (PWN) is the only known PWN to exhibit flares in gamma-rays on any time scale. Additionally, only ~20 Galactic objects are known to exhibit gamma-ray flares. The Fermi All-sky Variability Analysis (FAVA) tool is a publicly available tool which detects gamma-ray flares on weekly time scales. Assuming the intensity of the diffuse gamma-ray emission is constant over year-long timescales, it statistically compares the measured rate in a given week with the rate evaluated over the entire Fermi-LAT mission. In light of some FAVA flares being localized in the vicinity of pulsars and PWN, we look to investigate the origin of these flares with a detailed, and up-to-date Fermi likelihood analysis. This program has the potential to detect another Crab-like, flaring PWN.
171186	MATTHEW	KERR	ARE THE FERMI GEVATARS A NEW CLASS OF PULSAR?	Using machine learning and empirical techniques, we have discovered a new class of unidentified Fermi source which we dub "GeVatars" because their luminosity sharply peaks at a GeV. We hypothesize that at least some GeVatars may be a new class of pulsars powered by polar cap emission. Although this mechanism was largely ruled out for the bulk of known, energetic gamma-ray pulsars, it may play a role as pulsars age and become fainter. Because emission from the polar cap surface is strongly attenuated by the strong magnetic field, the predicted spectra match those of the GeVatars. If this scenario applies, then for most of these sources radio pulsations should also be detectable, we propose to test the polar hypothesis by carrying out deep GBT radio pulsation searches.

171187	MANEL	ERRANDO	A HIGH-CONFIDENCE DETECTION OF BLAZAR PAIR HALOES USING LAT	TeV emission from blazars can be used to probe the intergalactic magnetic fields and measure their intensity, coherence length, and helicity. Intergalactic magnetic fields deflect the electron-positron pairs produced by TeV gamma-rays from blazars, resulting in broadened beams of secondary GeV gamma-rays developing along the projected direction of the blazar jet. We propose a a novel analysis that uses the jet orientation of a selection of BL~Lac-type blazars obtained from VLBA radio observations to search for signatures of pair haloes in GeV data from the {\it Fermi}-LAT space observatory. Our search will improve the sensitivity of previous studies by taking the asymmetry of the pair haloes into account, increasing the signal-to-noise ratio and reducing the sensitivity of the search.
171188	EILEEN	MEYER	CIRCULAR POLARIZATION AS A DIAGNOSTIC FOR FERMI BRIGHT BLAZARS	Measurements of intrinsic circular polarization are a unique way to probe the matter content of jets, but very few observational programs have been carried out. We propose a unique program of optical circular polarization monitoring of bright Fermi blazars during 2024-2025. One of the primary outcomes will be a catalog of optical circular polarization measurements for 18 sources in our primary sample; in addition we will follow alerts from Fermi to observe serendipitous flaring sources whenever possible.