



Commission on Astroparticle Physics (C4)

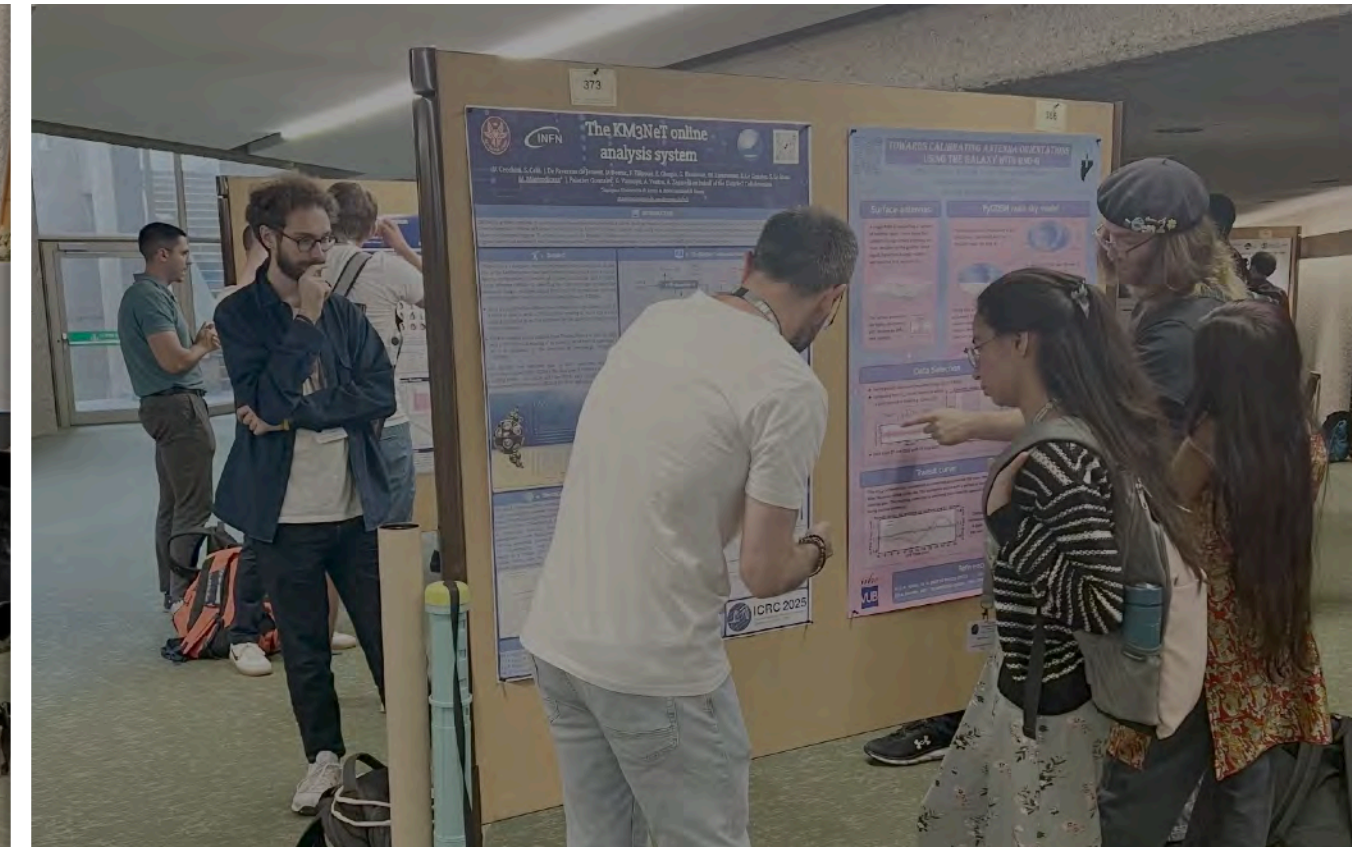
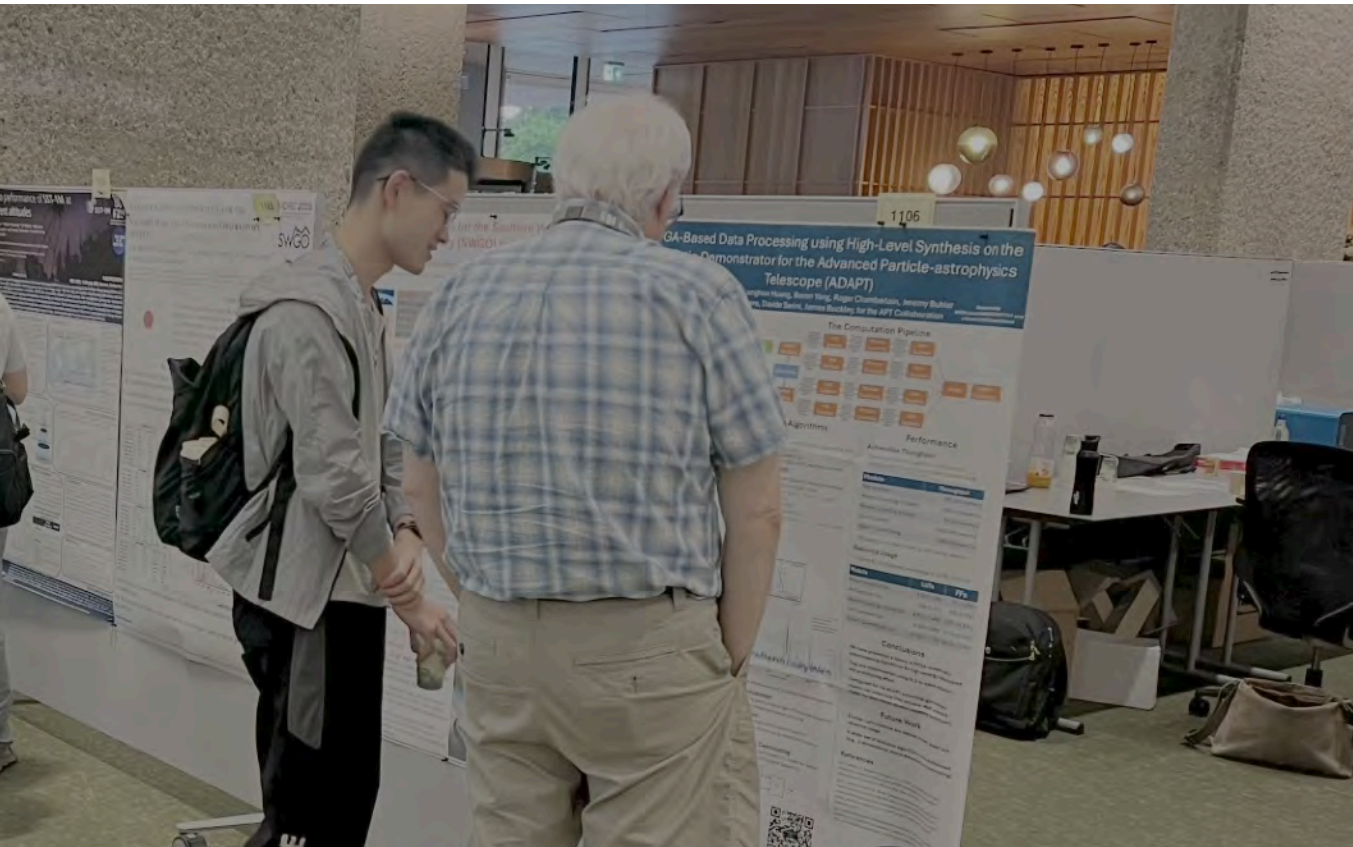
ICRC Poster Prize 2025



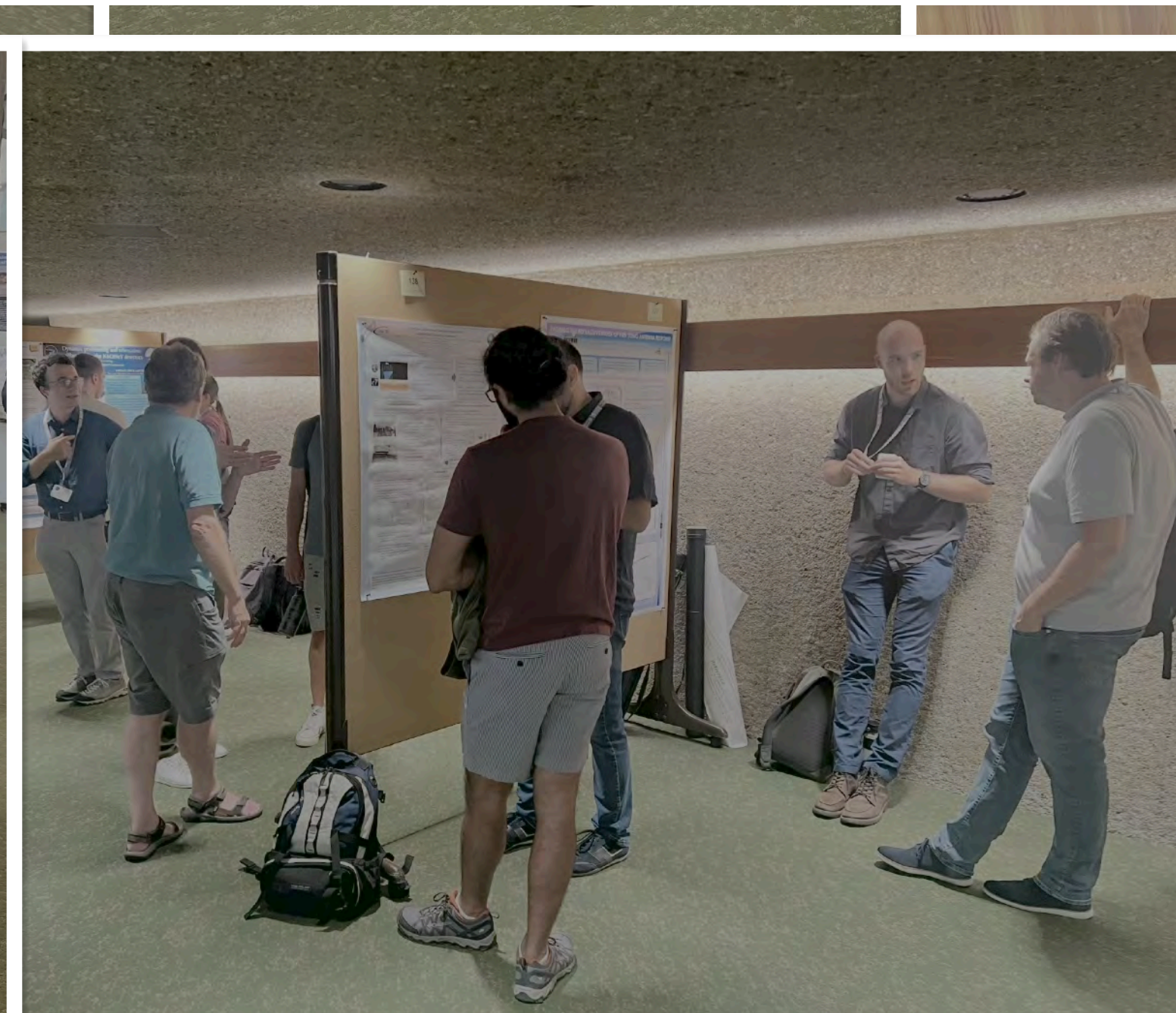
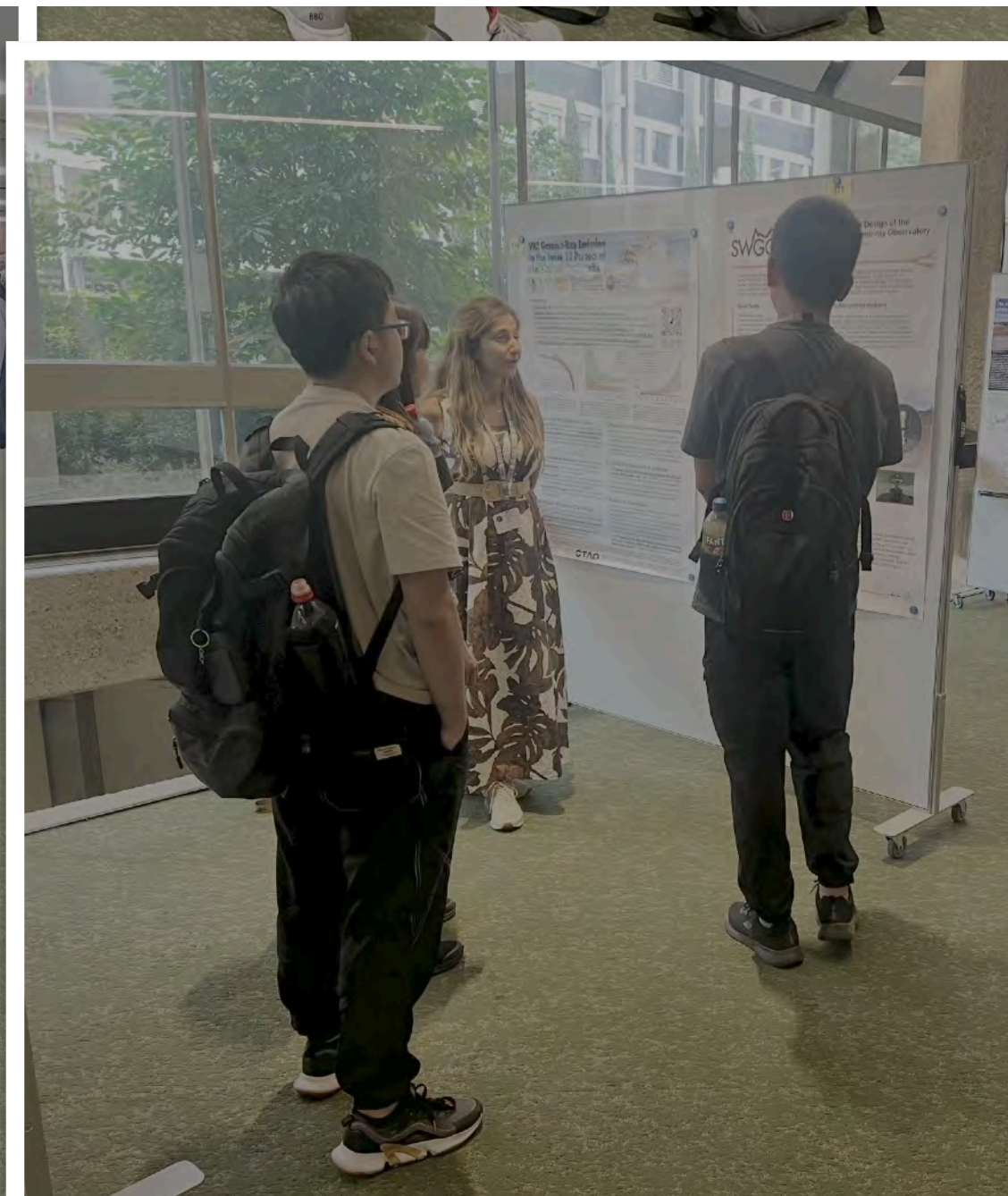
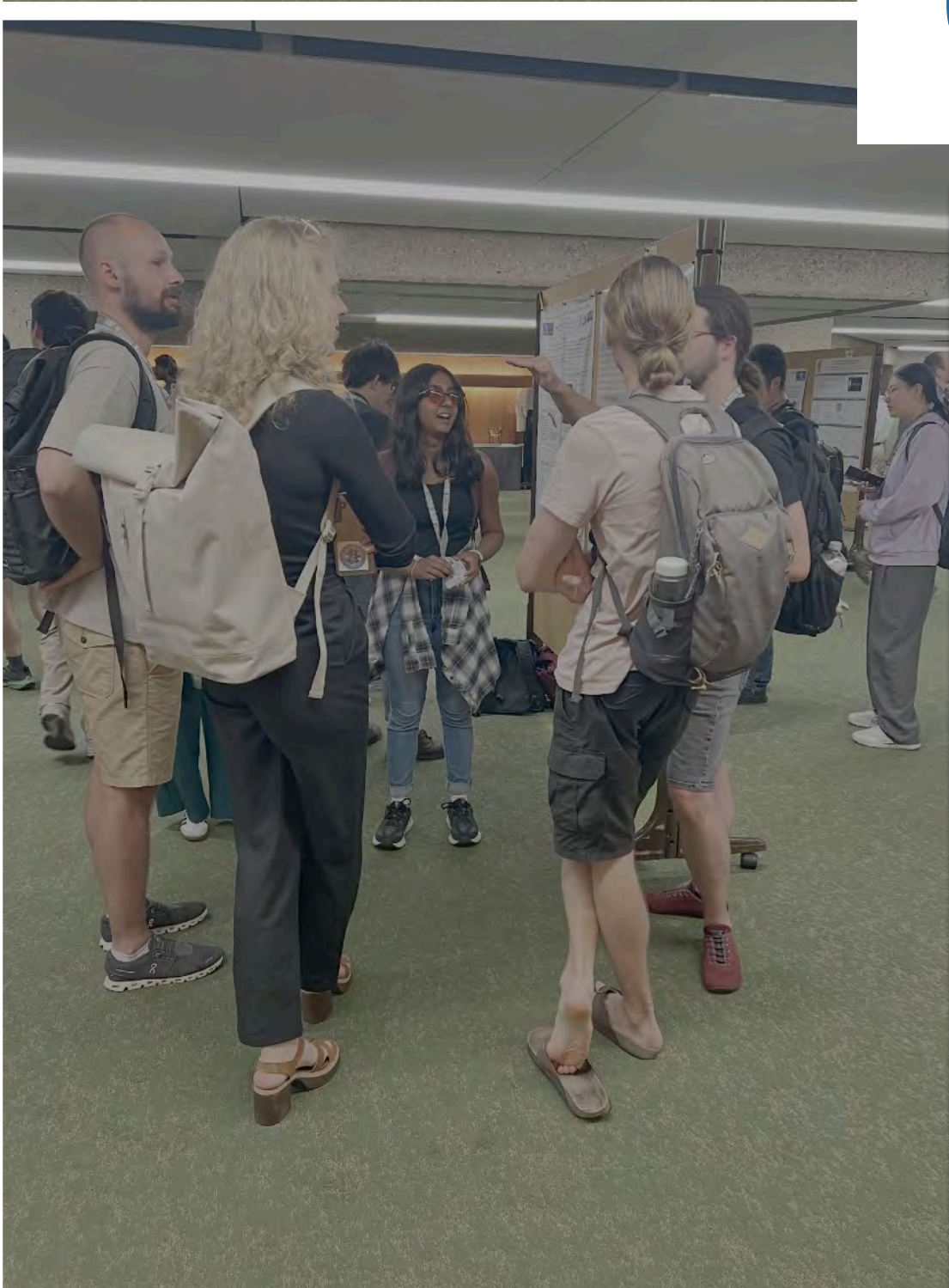
Poster sessions and discussions



Poster sessions and discussions



604 posters in 2 poster sessions – 2 poster prizes



Winners of ICRC Poster Prize 2025



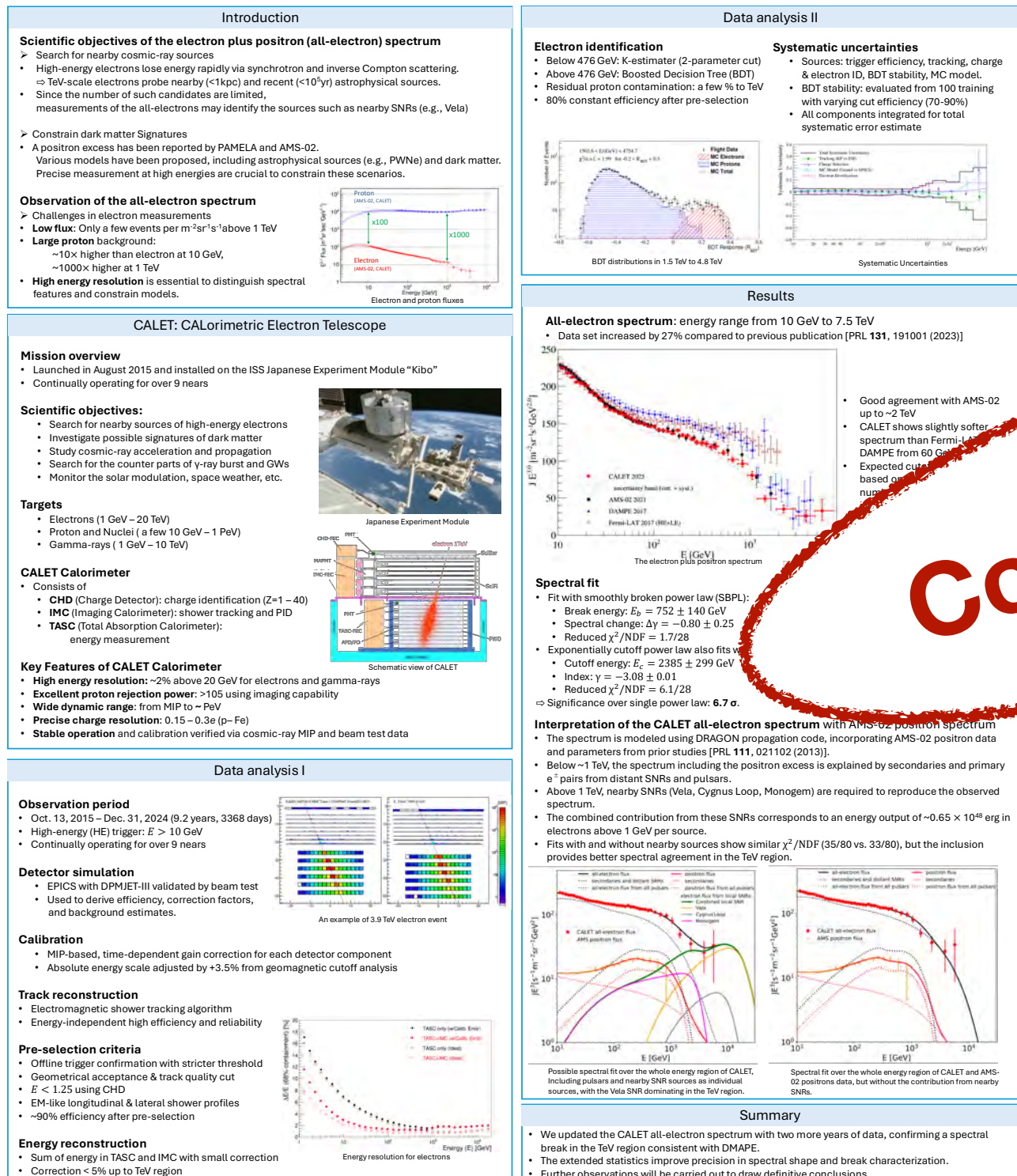
Precise Measurement of the Electron plus Positron Spectrum with CALET on the International Space Station

Yosui Akaike^{1,2} and Shoji Torii¹ for the CALET Collaboration

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The primary objectives of the CALorimetric Electron Telescope (CALET) mission are to search for possible nearby cosmic-ray sources and dark matter signatures through the precise measurement of the electron plus positron (all-electron) spectrum. The instrument is optimized to measure the all-electron spectrum well into the TeV region, with a total thickness of 30 radiation lengths at normal incidence and fine shower imaging capability. These capabilities provide an excellent energy resolution of 2% over a wide energy range from 20-GeV to 20-TeV, and enable highly precise measurements by suppressing hadron contamination to below a few percent. CALET has been accumulating scientific data for more than nine years on the International Space Station without major interruption. In this study, we will present the latest results of the all-electron spectrum with high-statistics data, and briefly discuss its interpretation regarding nearby electron sources at the TeV region.



Congratulations!



An open-source code for modeling the extragalactic background light

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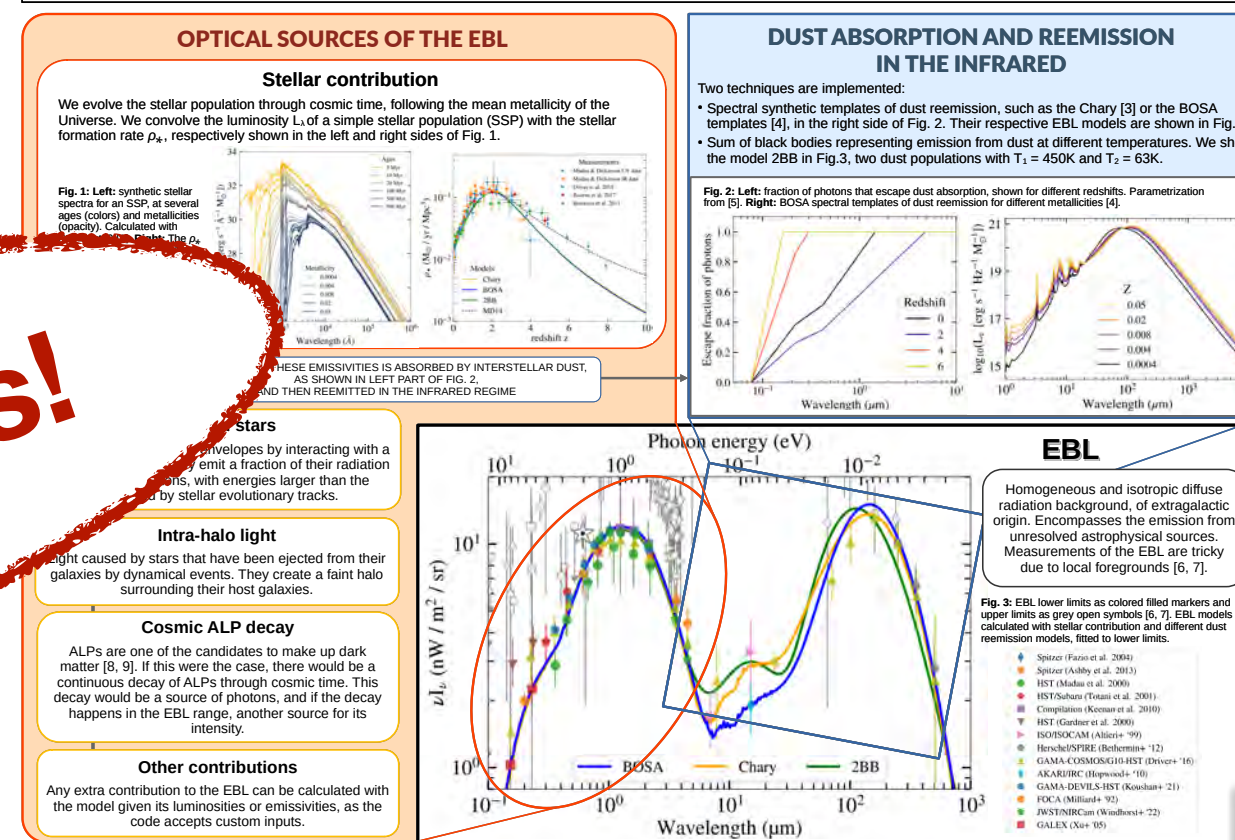
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Open repository of the EBL model

Extragalactic very-high-energy (VHE: $E > 100$ GeV) gamma rays suffer absorption in interactions with photons of the Extragalactic Background Light (EBL). The EBL is an isotropic diffuse field spanning the optical and infrared regions of the electromagnetic spectrum. Observational data allow for uncertainties in the current EBL models, which in turn affect VHE analyses. We present an open-source code to compute the EBL using a forward-folding model. The dominant contribution to the optical background is stellar emission, which we compute by evolving the spectrum of a single stellar population, using the mean metallicity evolution and the star formation rate through redshift. Additional EBL sources can be provided by the user. The code already includes optional contributions from sources such as stripped stars, intra-halo light, and axion-like particle (ALP) dark matter decay. The optical emissivity is then absorbed by interstellar dust and reemitted in the infrared regime. We offer multiple modeling options for this process, by using either spectral templates or a combination of blackbodies.

We present a use case where we simulate an observation of Markarian 501 in a high-flux state using the Large High Altitude Air Shower Observatory array (LHAASO). The observed VHE spectrum is highly sensitive to the EBL opacity coming from the infrared, allowing us to distinguish between different dust reemission models and constrain model parameters.



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