

Gamma-ray astronomy activities in CIEMAT

Juan Bernete Medrano



GOBIERNO
DE ESPAÑA

MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES

Ciemat
Centro de Investigaciones
Energéticas, Medioambientales
y Tecnológicas



GOBIERNO
DE ESPAÑA

MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES

Ciemat
Centro de Investigaciones
Energéticas, Medioambientales
y Tecnológicas

CIEMAT

National laboratory under the Spanish Ministry of Science, and Innovation through the Secretariat General for Research



Headquarters in Madrid

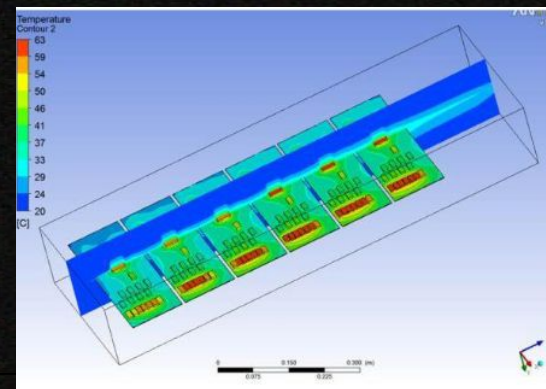
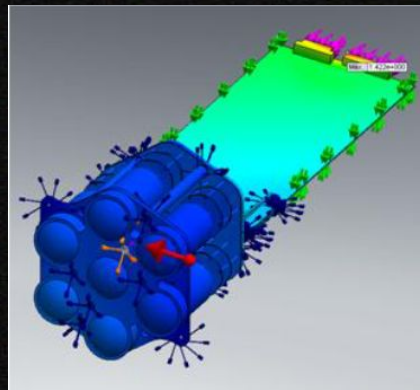
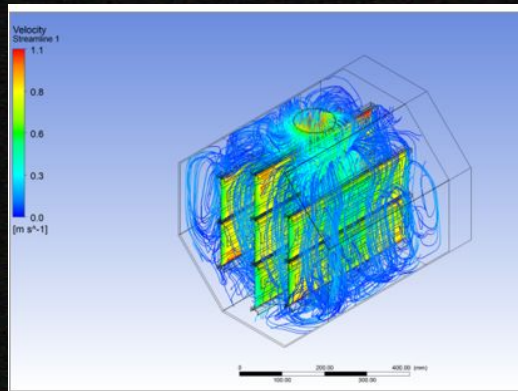
GOVERNMENT OF
SPAIN

Ministry of Science
and Innovation

Secretariat General
for Research

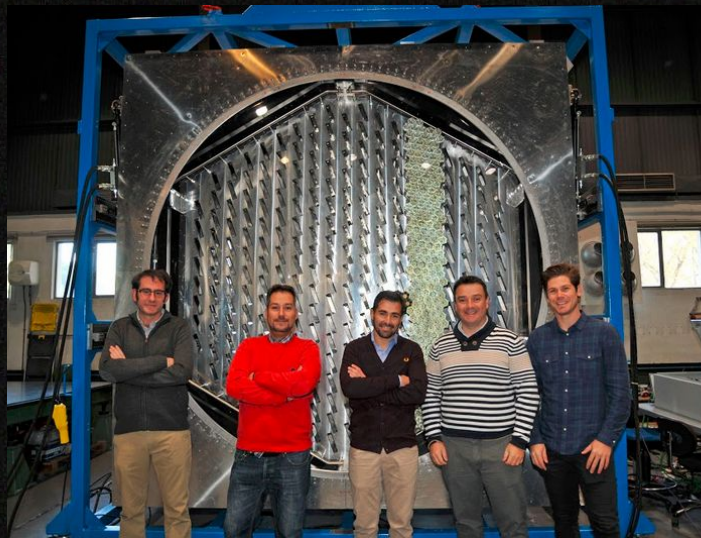
CIEMAT

LST (& MST) mechanics design





LST-1 camera production & installation



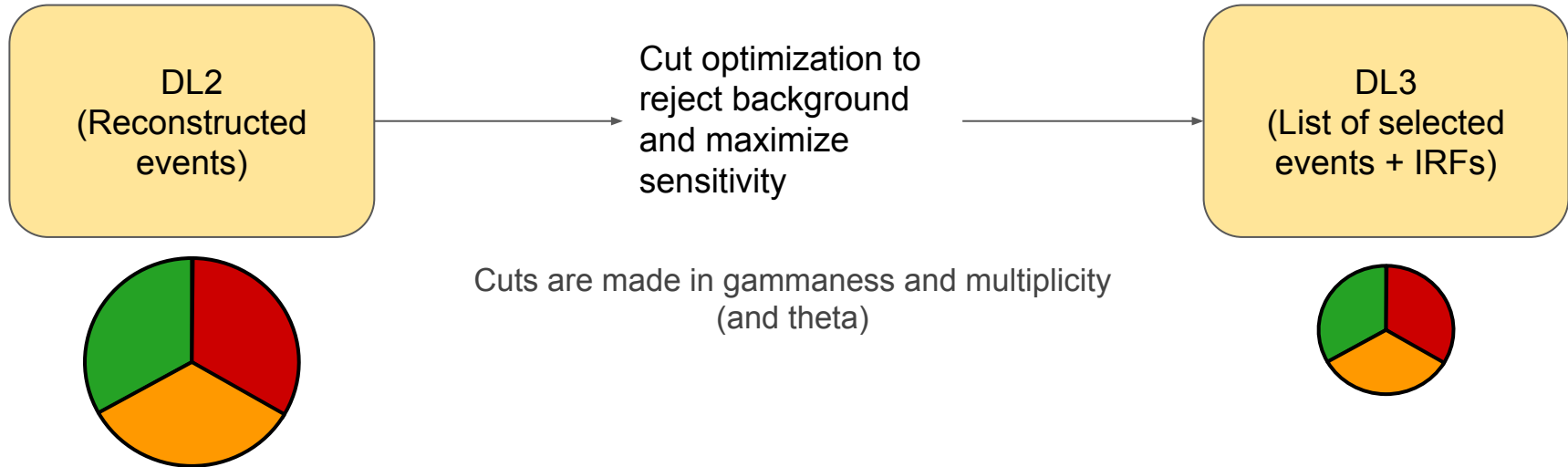


Data analysis and science with MAGIC, LST and CTAO

- Iron cosmic-rays spectrum
- Analysis of galactic sources and Pevatrons
- Intensity interferometry
- Implementing event types to improve the performance of gamma-ray analysis

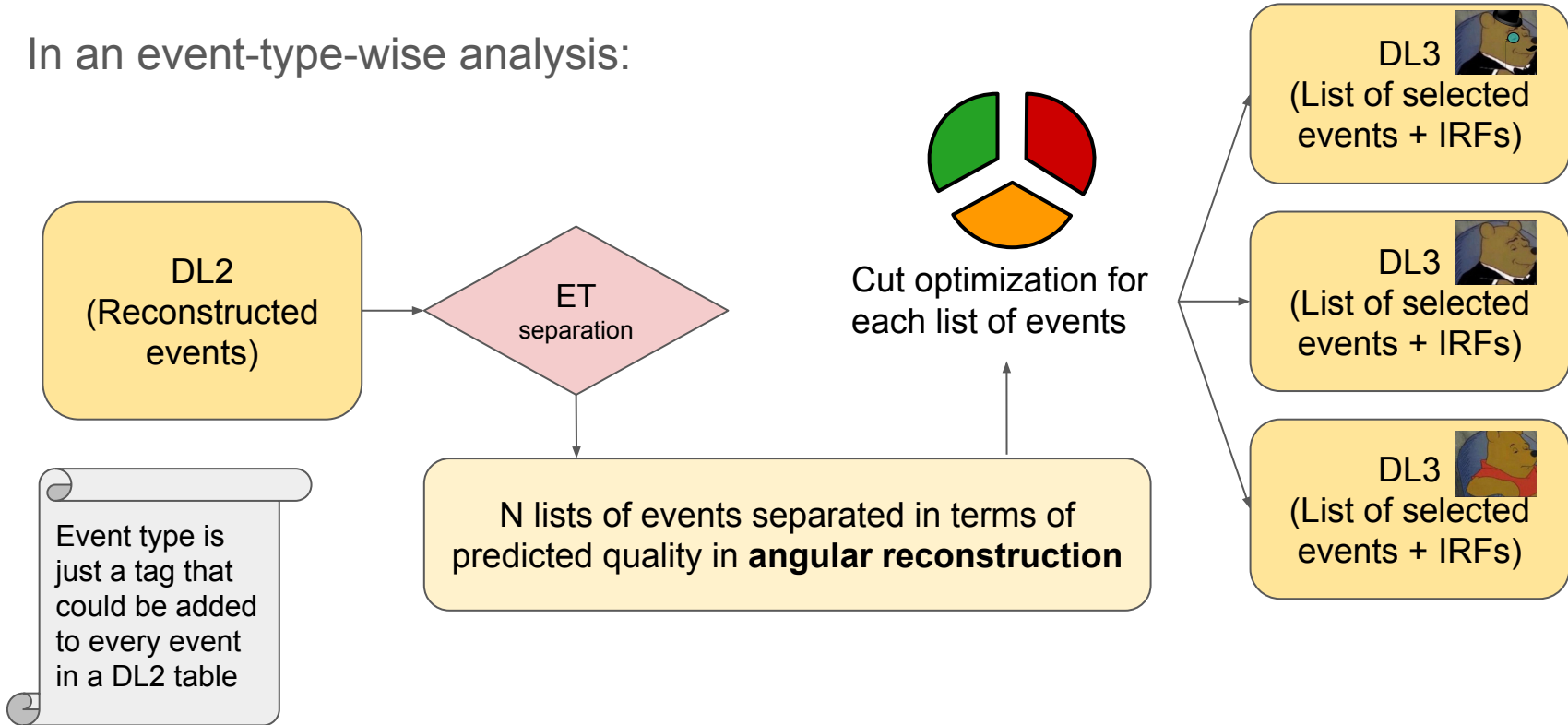
What is an event-type based analysis?

In the standard analysis:

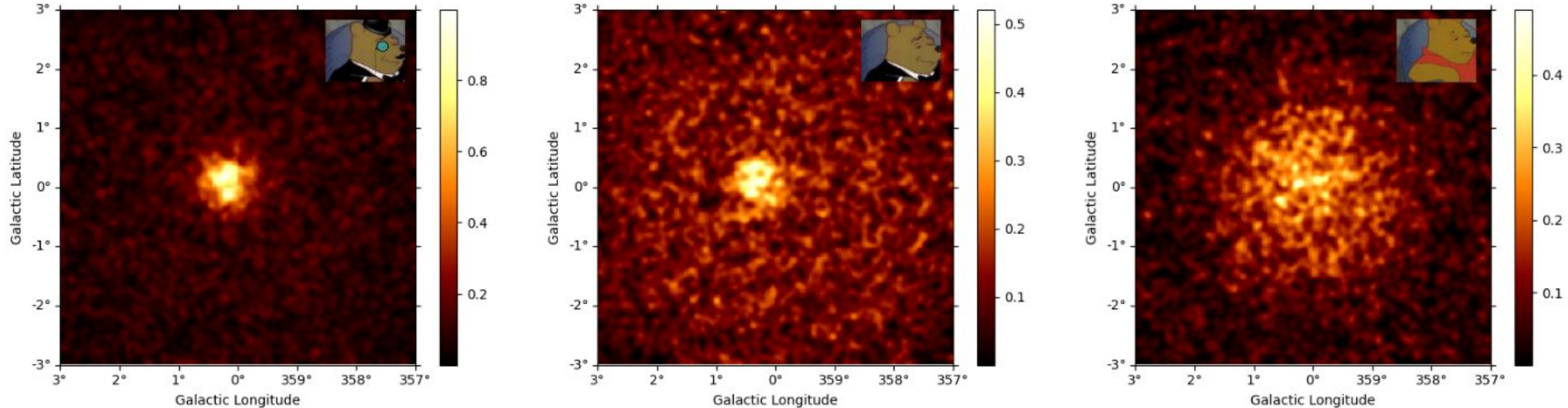


What is an event-type based analysis?

In an event-type-wise analysis:



High level analysis with Gammapy



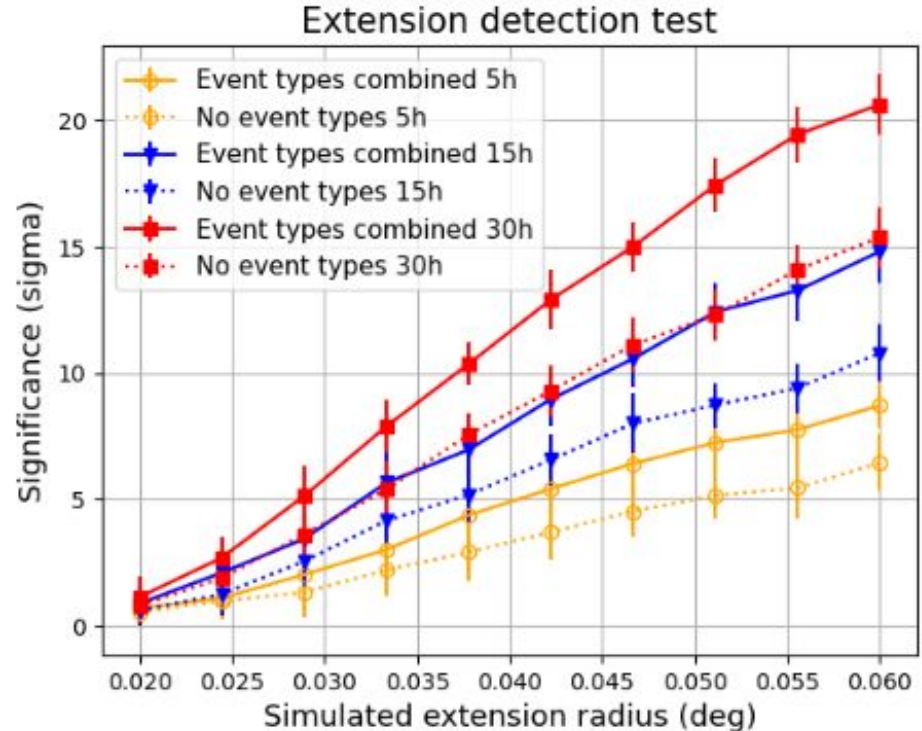
These IRFs can be used to simulate observations with Gammapy that can be treated as independent and then perform a joint analysis

Improvement on detection of extended sources

Significance of a extended source fit with respect to a point-like null hypothesis for different simulations of extended sources with different radii and exposure times.

The improvement when using event types is clear.

Similar results in tests separating two close sources, event types always help!



Thank you!



GOBIERNO
DE ESPAÑA

MINISTERIO
DE CIENCIA, INNOVACIÓN
Y UNIVERSIDADES

Ciemat
Centro de Investigaciones
Energéticas, Medioambientales
y Tecnológicas