

Tango in Paris

**Testing Astroparticle with the New GeV/TeV Observations
Positrons And electrons : Identifying the Sources**

May 4th - 6th, 2009

Institut d'Astrophysique de Paris, France





Une production ALBERTO GRIMALDI

Marlon
Brando

Le
Dernier
Tango à
Paris

Un Film de BERNARDO BERTOLUCCI

A SCHNEIDER • MARIA MICHI • GIOVANNA GALLETTI

PIERRE LEAUD et aussi MASSIMO GIROTTI

ALBERTO GRIMALDI Mis en scène par BERNARDO BERTOLUCCI

PRODUZIONI EUROPEE ASSOCIATE S.A.S. - ROMA LES PRODUCTIONS ARTISTES ASSOCIES S.A. - PARIS

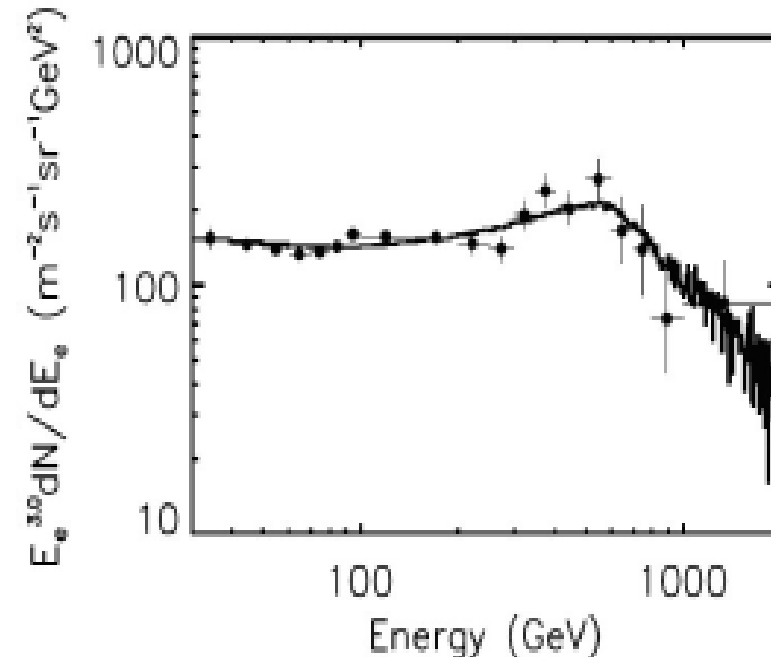
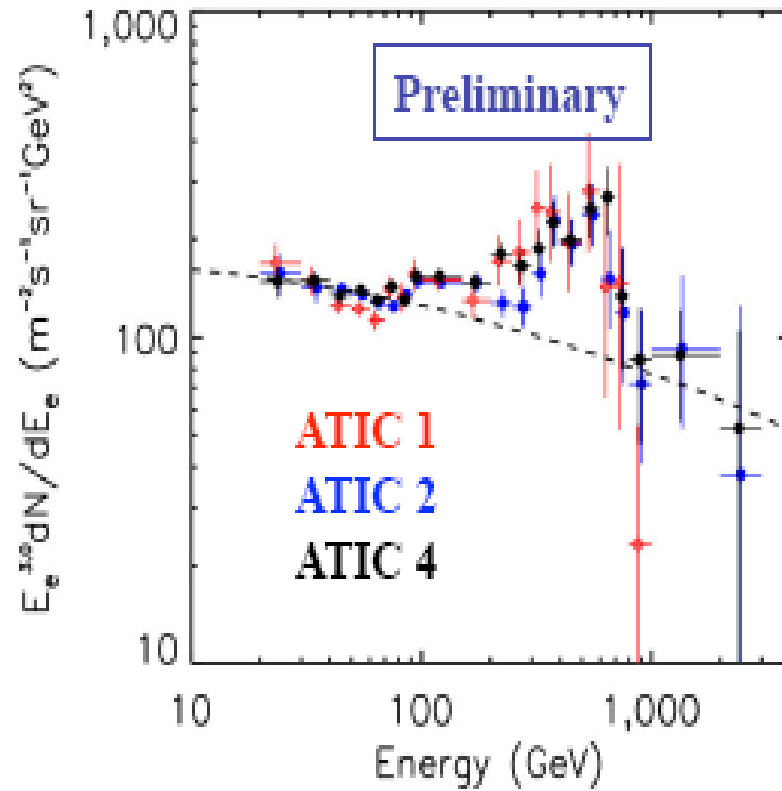


Outlook

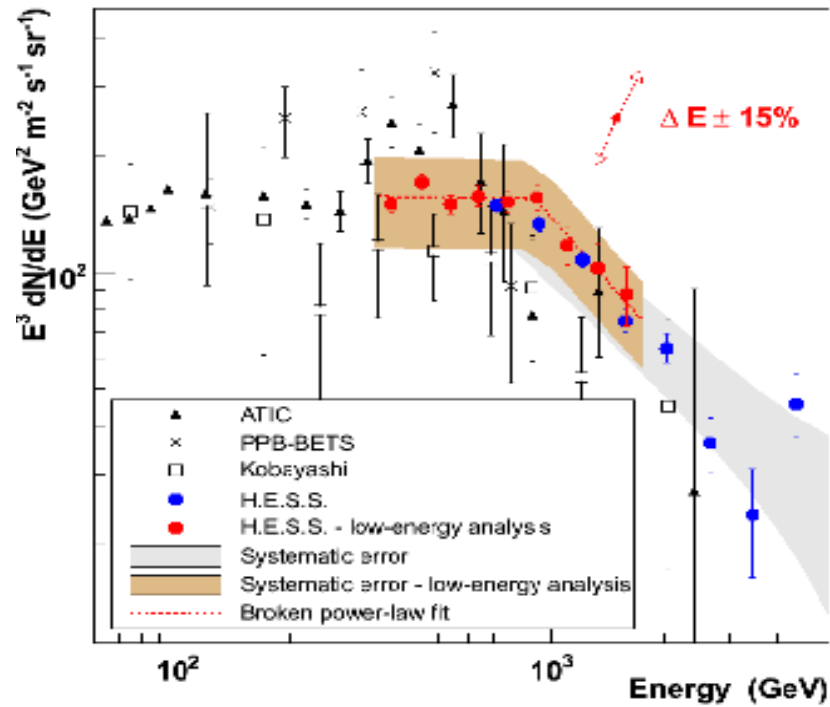
- Observations / experiments
- Theory



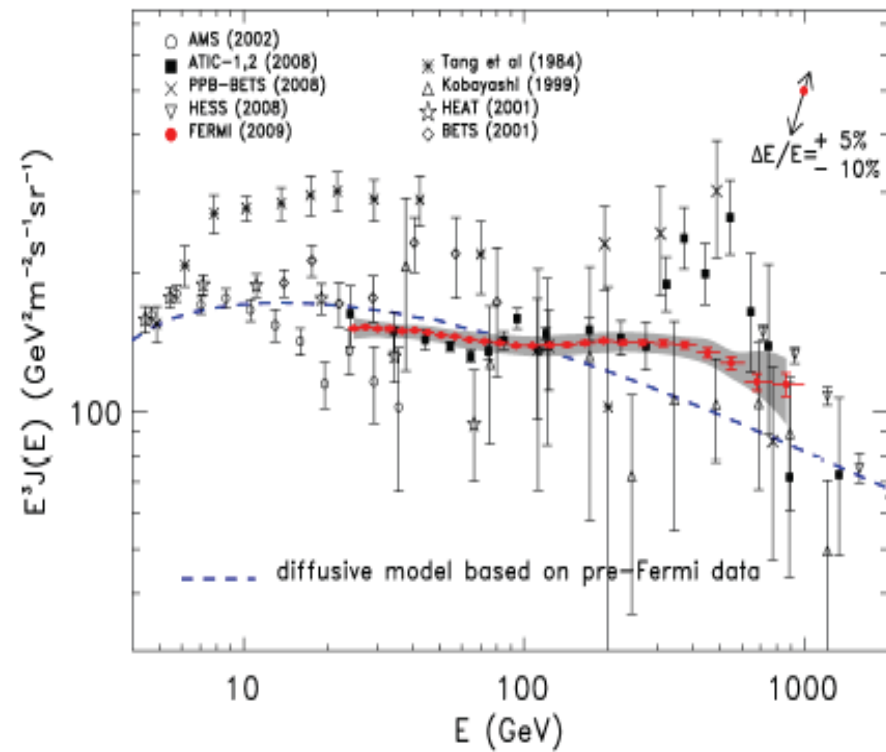
ATIC



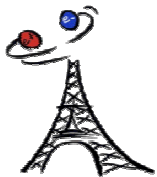
The others



K. Egberts for HESS

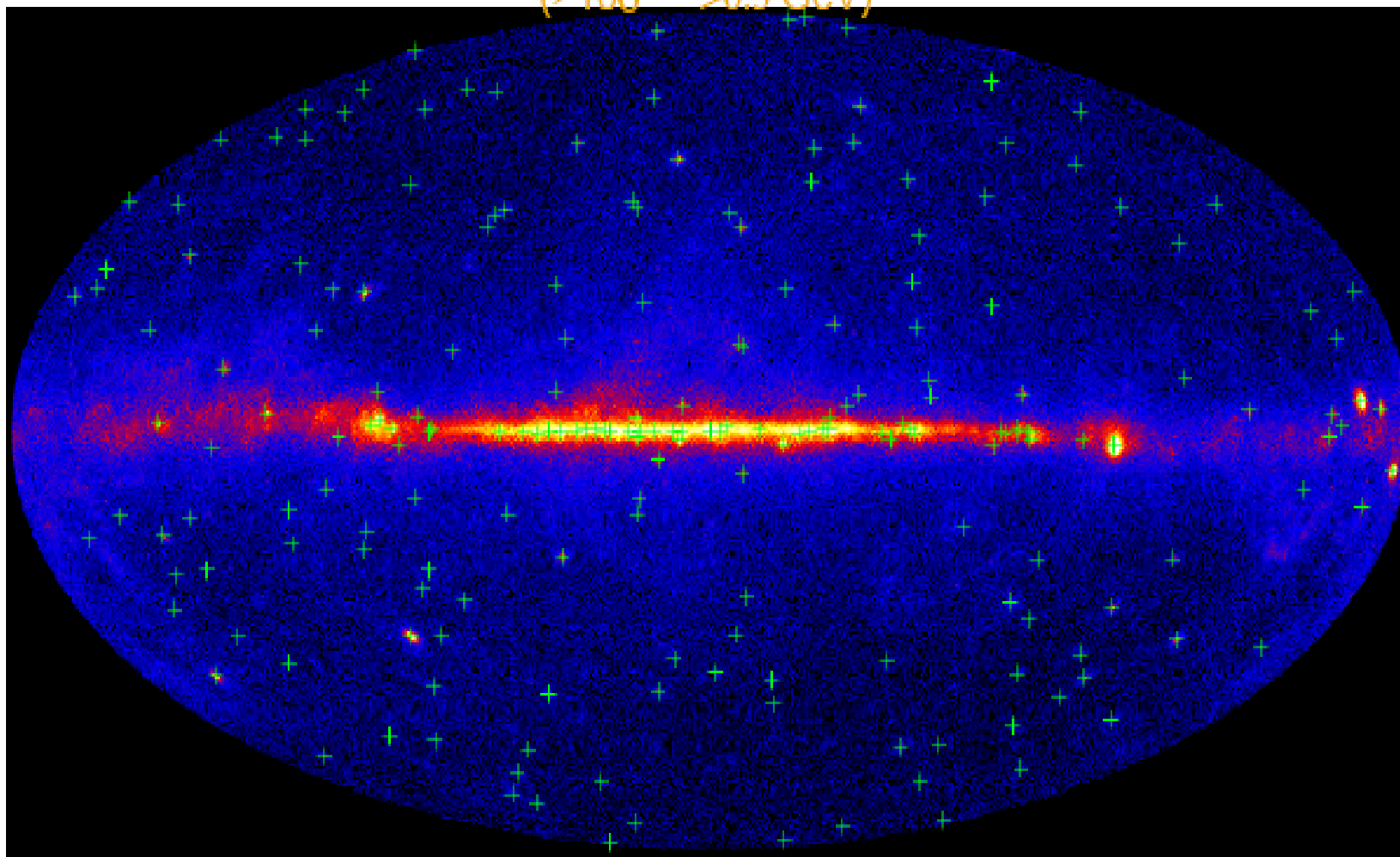


P. Bergeron for FERMI



3 months: 205 LAT Bright Sources

(>10 σ >0.3 GeV)



Fermi Large Area Telescope Bright Gamma-ray Source List

Abdo, A. A. et al. 2009, *Ap J Suppl submitted*, arXiv: [0902.1340](https://arxiv.org/abs/0902.1340)

Bright AGN Source List from the First Three Months of the Fermi Large Area Telescope Sky Survey

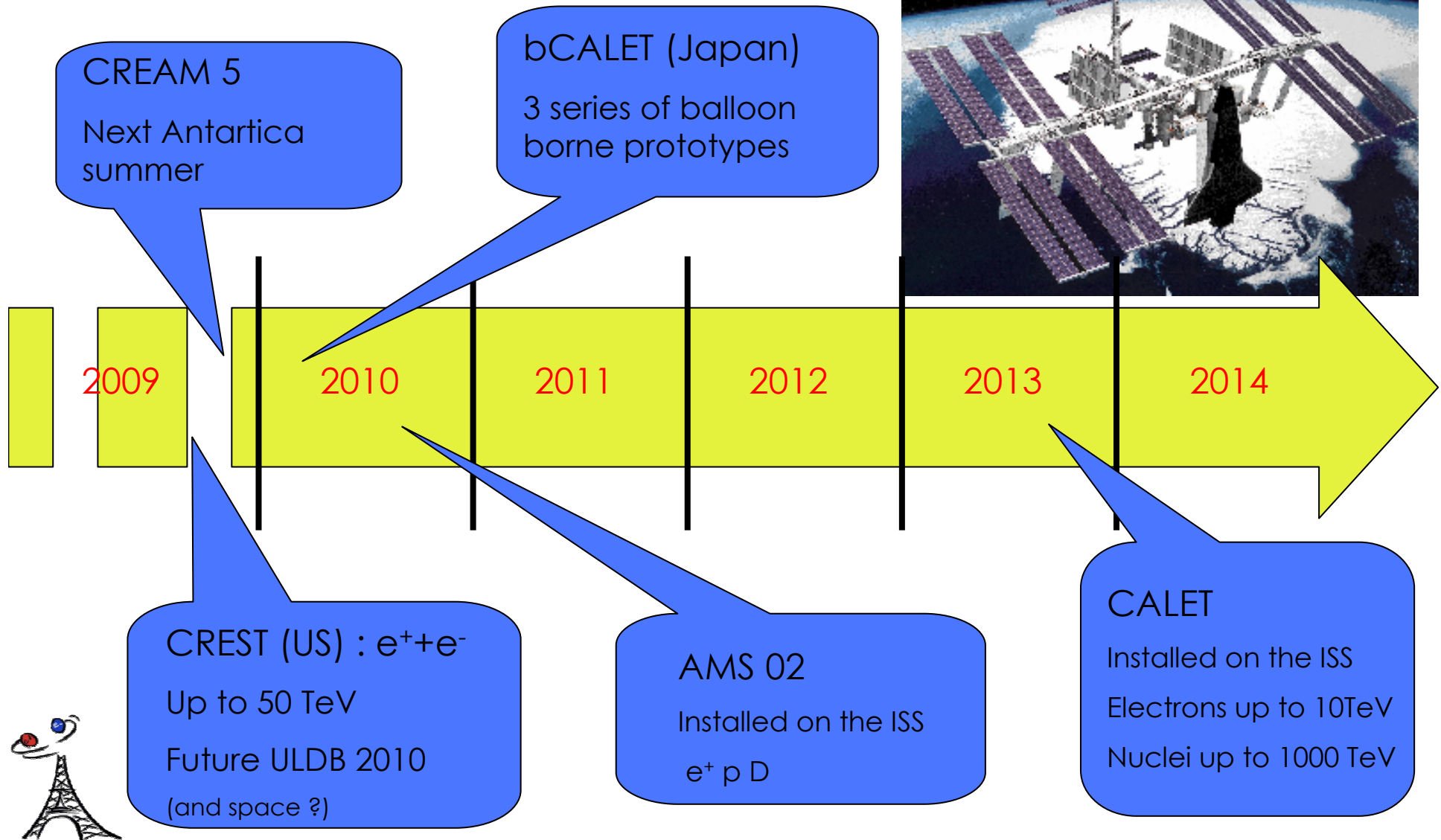
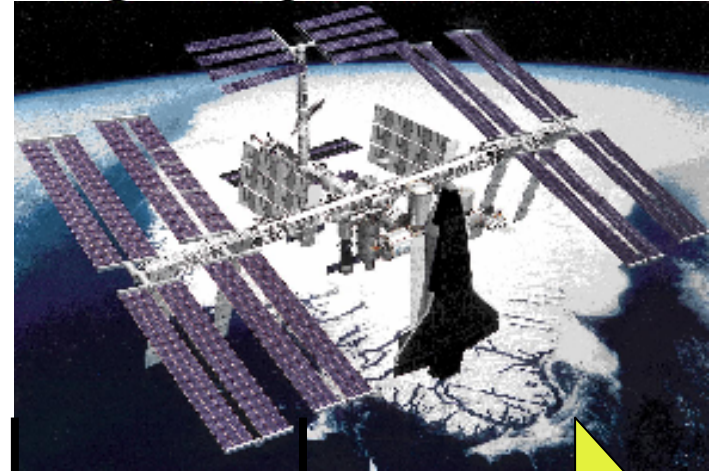
Abdo, A. A. et al. 2009, *Ap J submitted*, arXiv: [0902.1550](https://arxiv.org/abs/0902.1550)

Imaging Air Cherenkov Telescopes

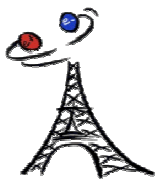
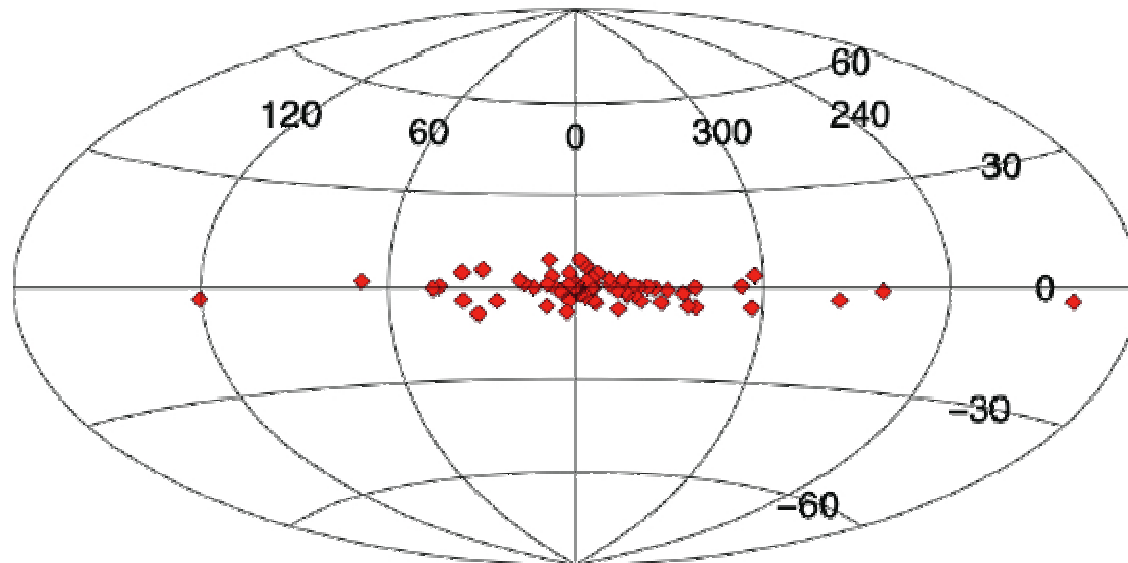
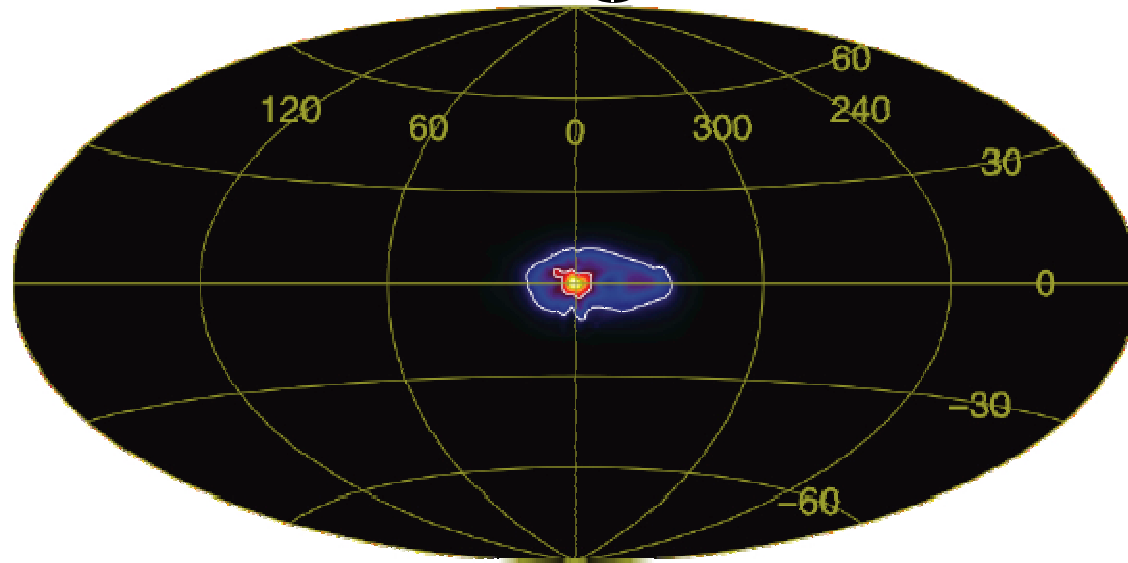
- Challenges
 - Anisotropy
 - Pulsars
 - High energy spectrum
- Issues
 - Monte Carlo simulations
 - Calibration
- Moon shadow



Future experiments



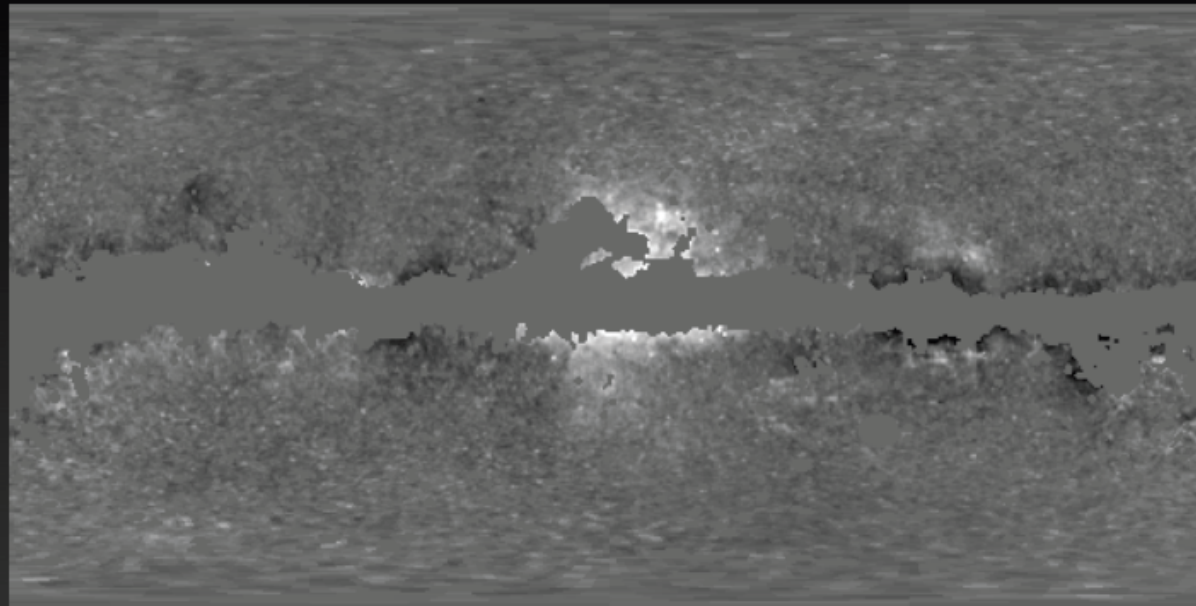
Integral



WMAP haze

peeling away foregrounds

K-band: 23 GHz



WMAP - CMB - free-free
- (thermal and spinning) dust
- (soft) synchrotron

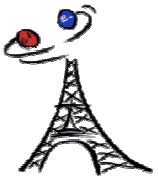


II. Theory

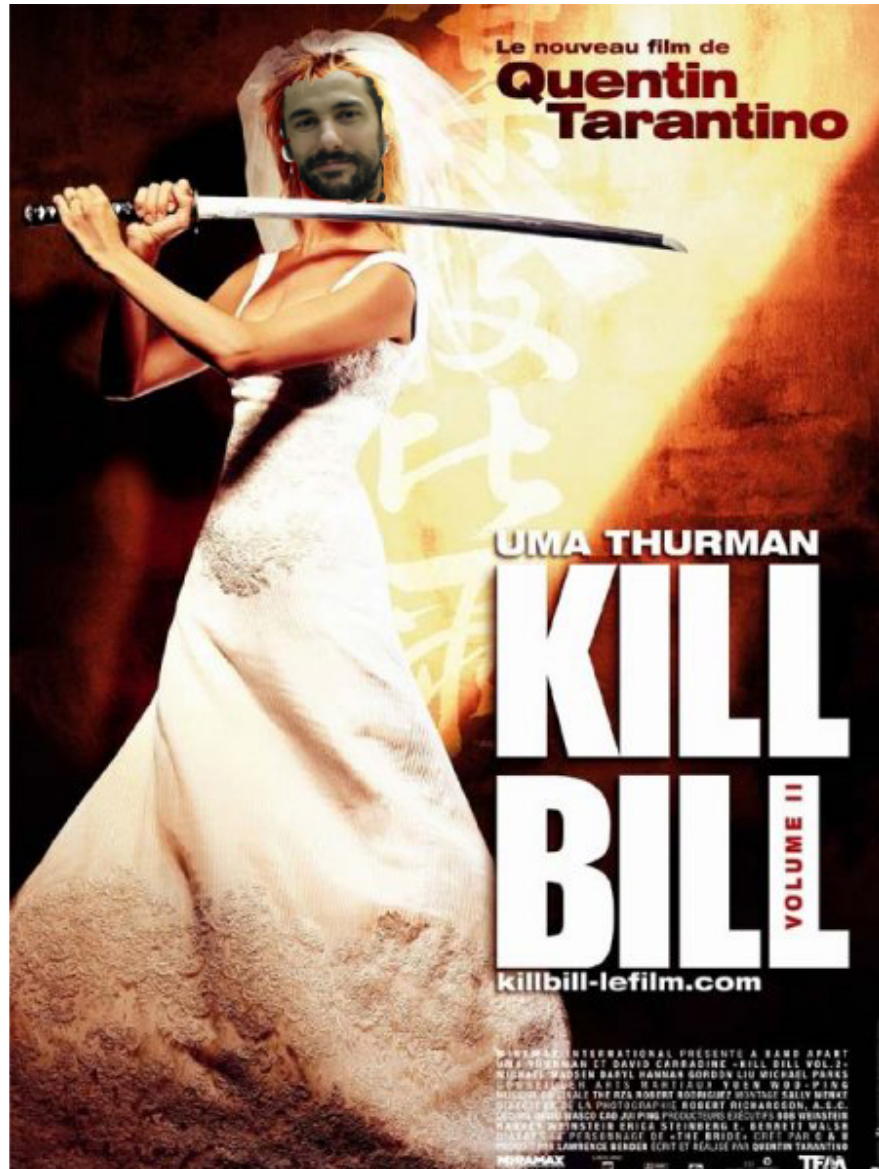


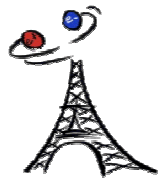
Cosmic ray acceleration

- Fermi mechanism
- Non-linear models
 - Magnetic fields
 - Maximum energy
 - Efficiency
 - Protons/leptons



Maurin vs Strong



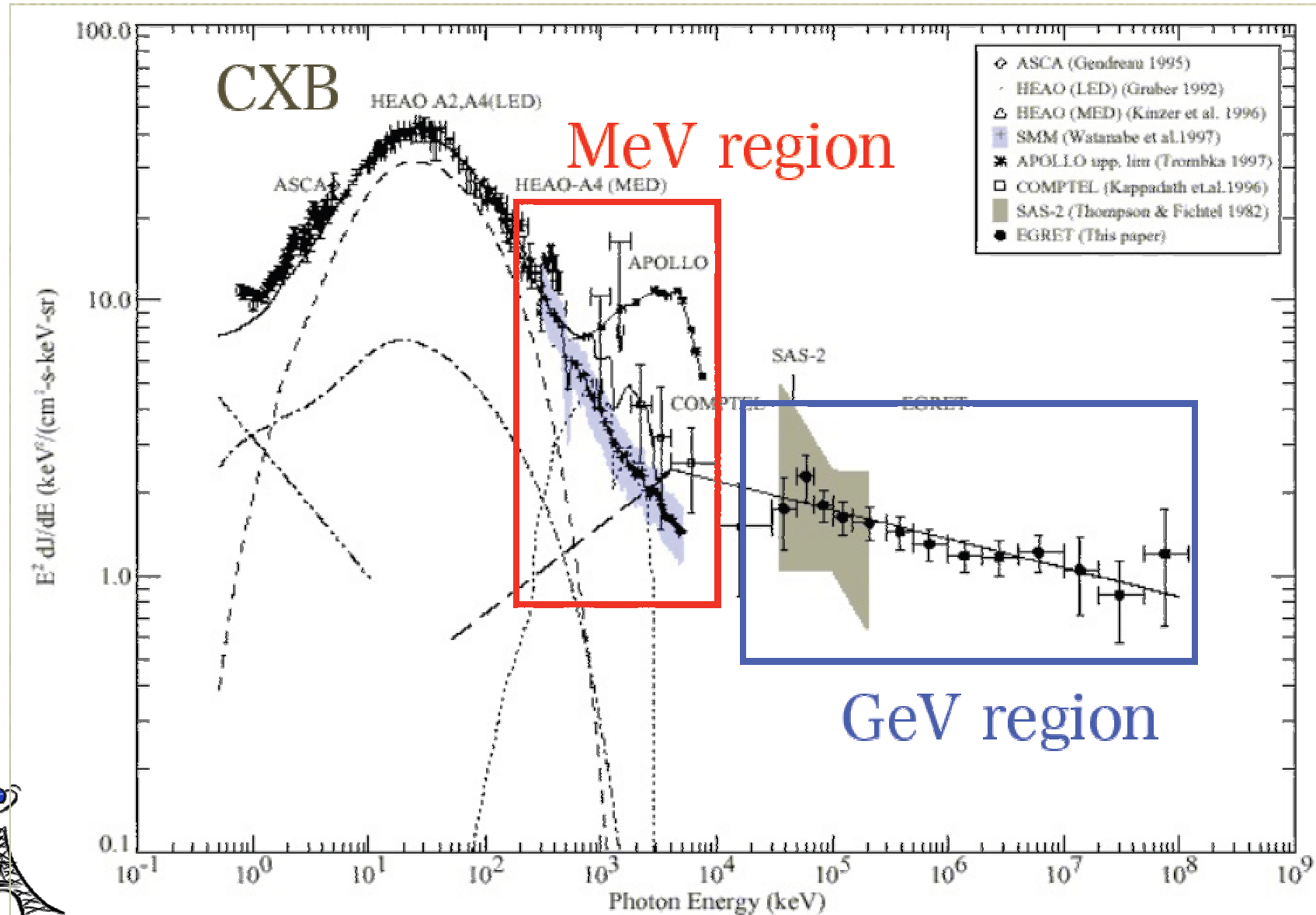


Cosmic Ray diffusion

- Models are quite satisfactory but...
 - We do not know what the sources are.
 - We have trouble explaining anisotropy.
 - Are spallation cross-sections reliable?
- What requires a model to be good?
 - Consistency (B/C, Be, γ , e^+ , e^- , etc.)
 - Constrain the parameters



Extra-Galactic diffuse emission



More informations

- <http://irfu.cea.fr/Meetings/tangoinparis/>

