Mrk 501 MWL campaign 2008
Magic Results

EVO telcon, 09.04.2009

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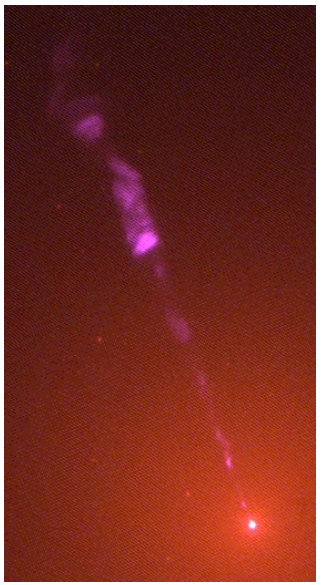


MAGIC

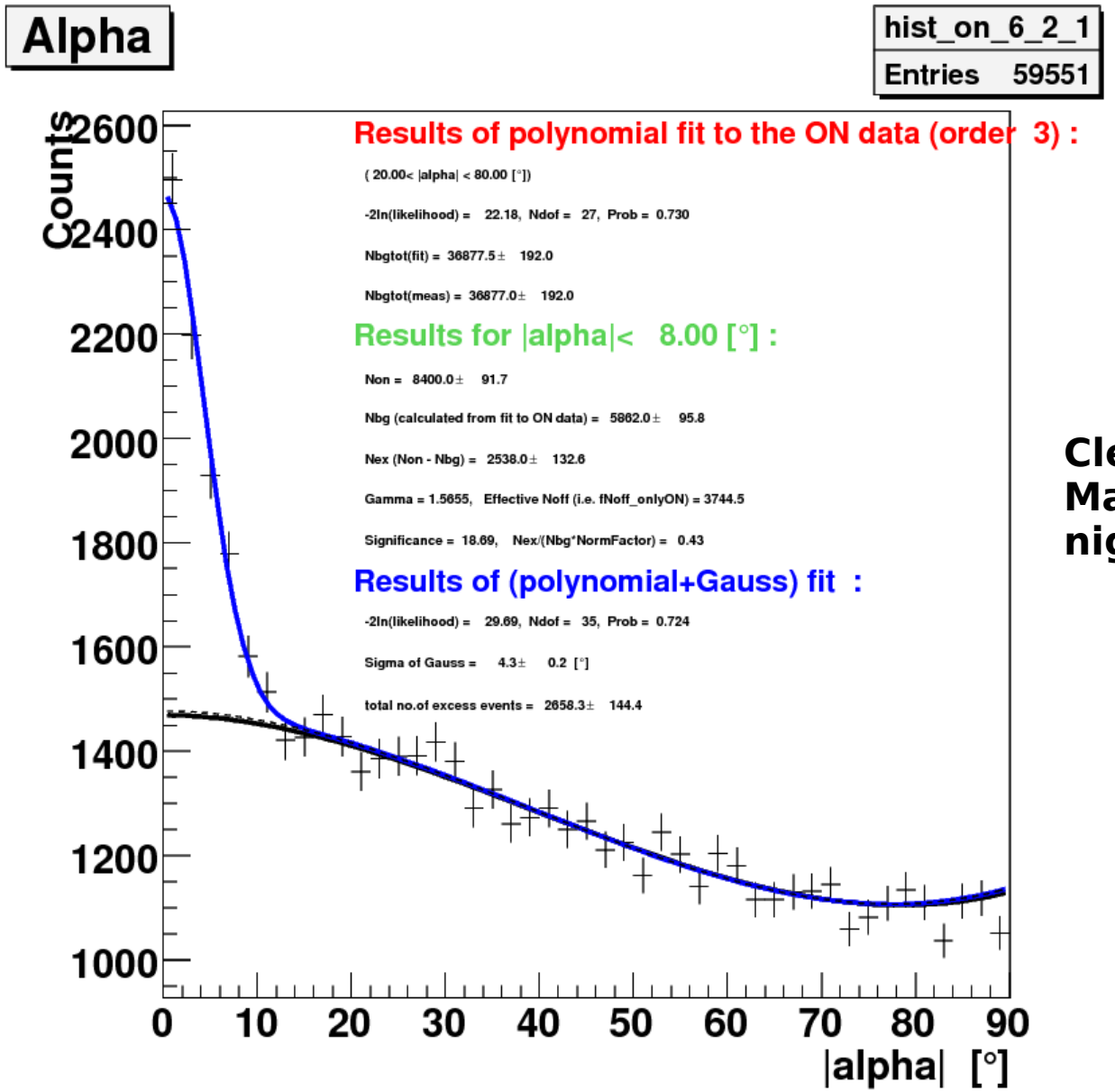
- **Imaging Air Cherenkov Telescope located on Canary Island La Palma**
- **Energy threshold ~50 GeV**
- **Collaboration of more than 150 physicists from 18 institutes and 11 countries.**

MAGIC
Major Atmospheric
Gamma Imaging
Cerenkov Telescope

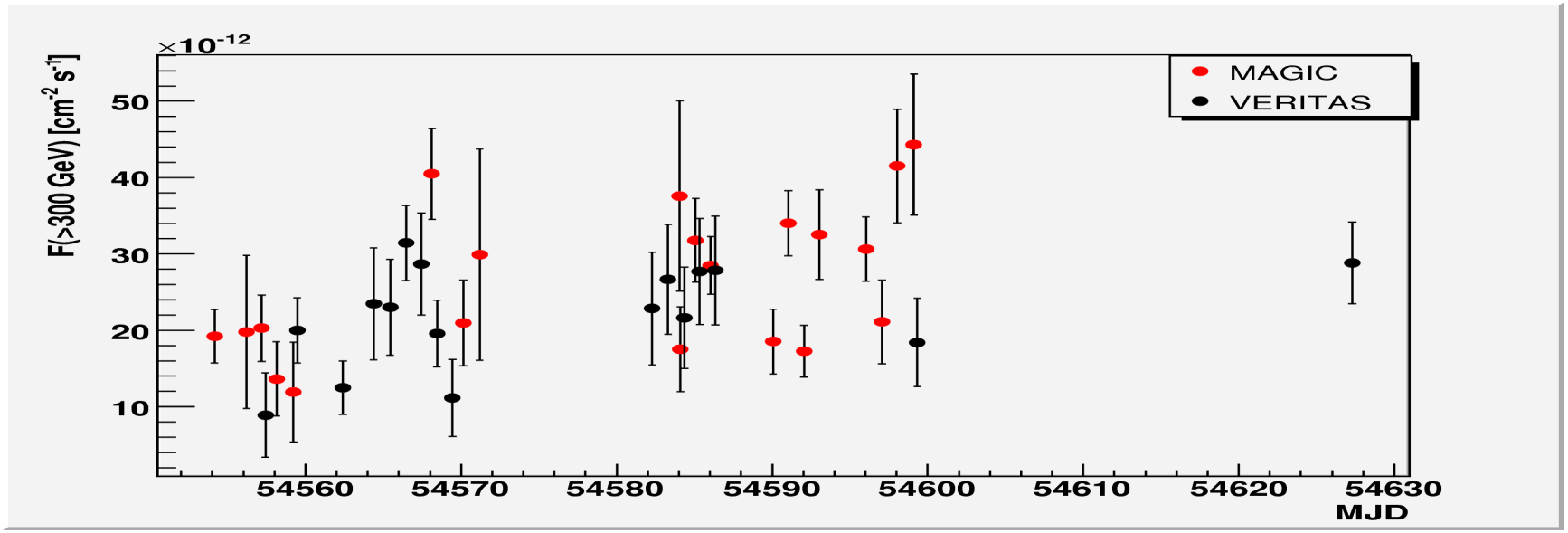
ETH Institute for
Particle Physics

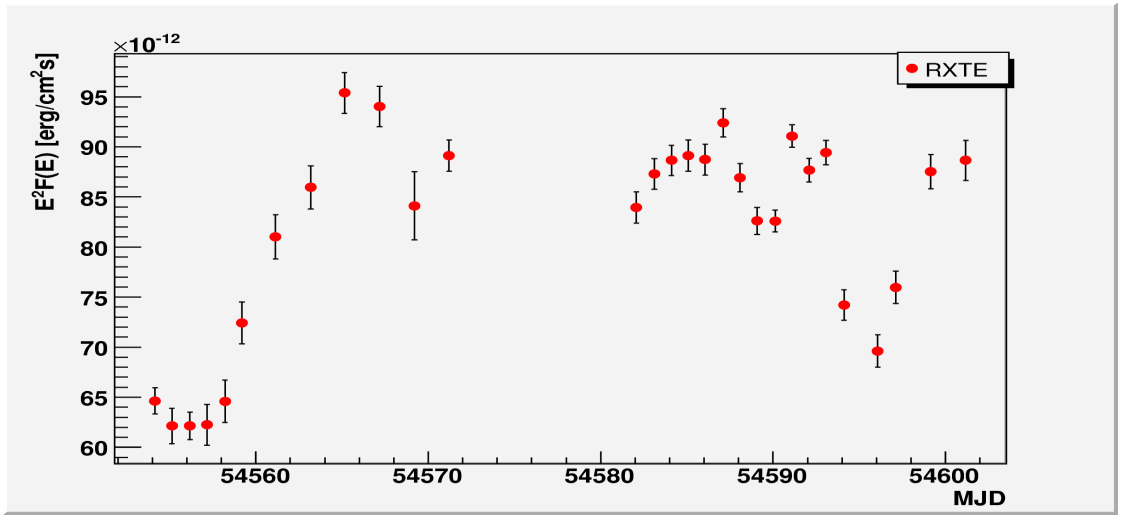
The Data

- **Observation window: March 29th until May 13th 2008**
- **Zenith angle range: 10° – 30°**
- **Observation mode: On – Off**
- **Obs. conditions: dark night (22.7h) & moderate moonlight (8.7h)**
- **Data analysis:**
  - ✗ **Standard MARS (Magic Analysis & Reconstruction Software)**
  - ✗ **Calibration, Time image cleaning, Image parametrization**
  - ✗ **γ- hadron separation and energy estimation with Random Forest**
- **Energy spectra: Unfolding using 3 different methods**
- **Two partially independent analyses of whole data sample**



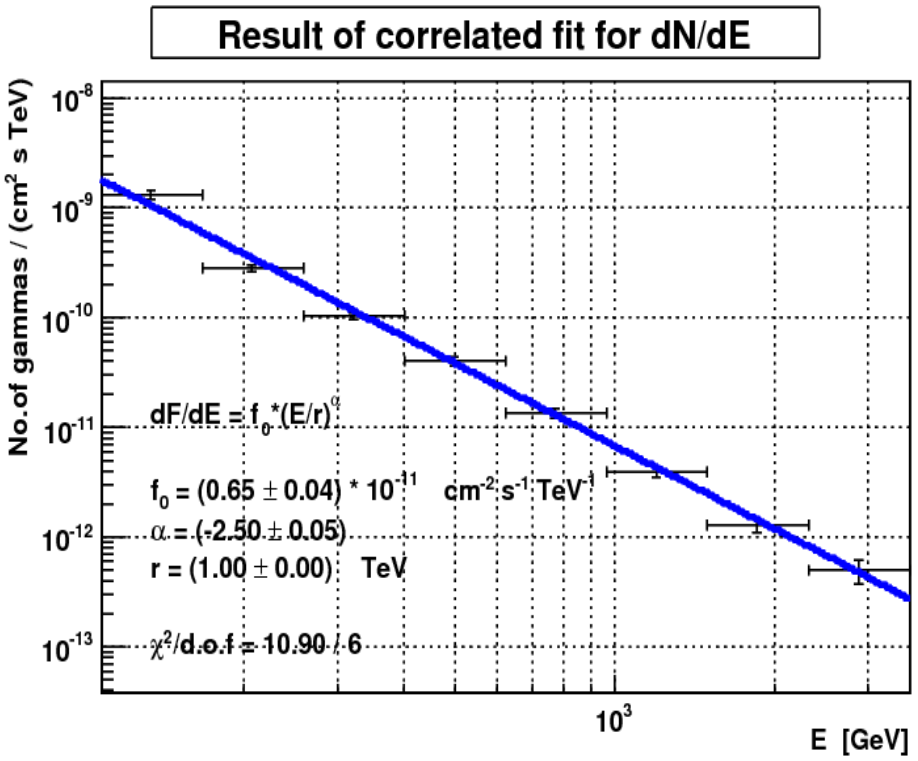
Clear signal in combined Magic data sets (moon, dark night)

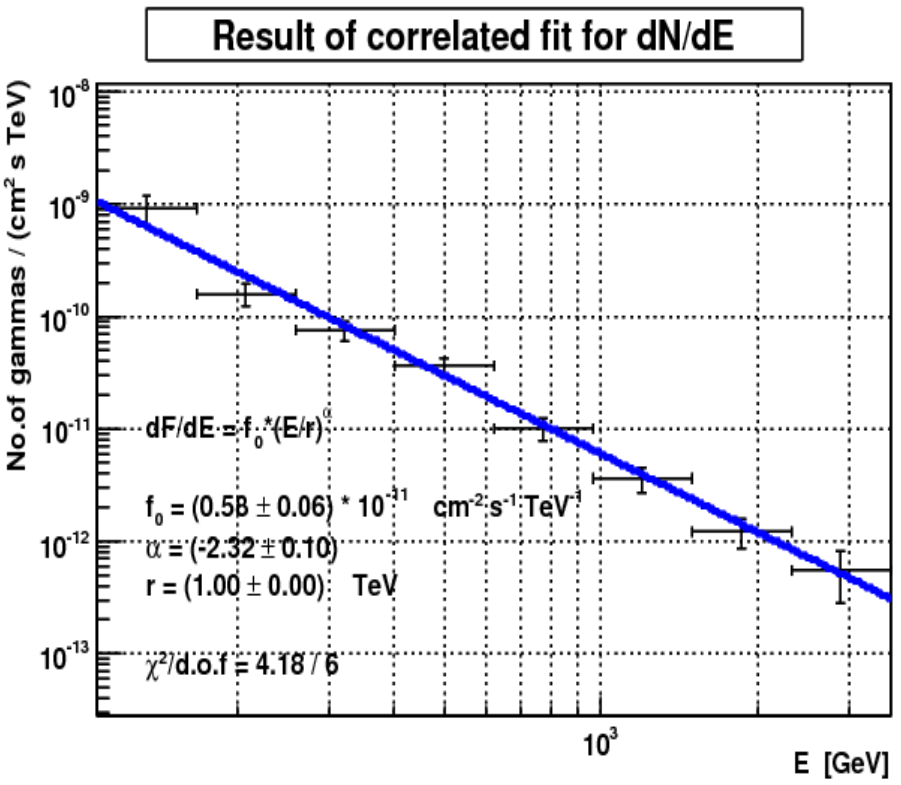




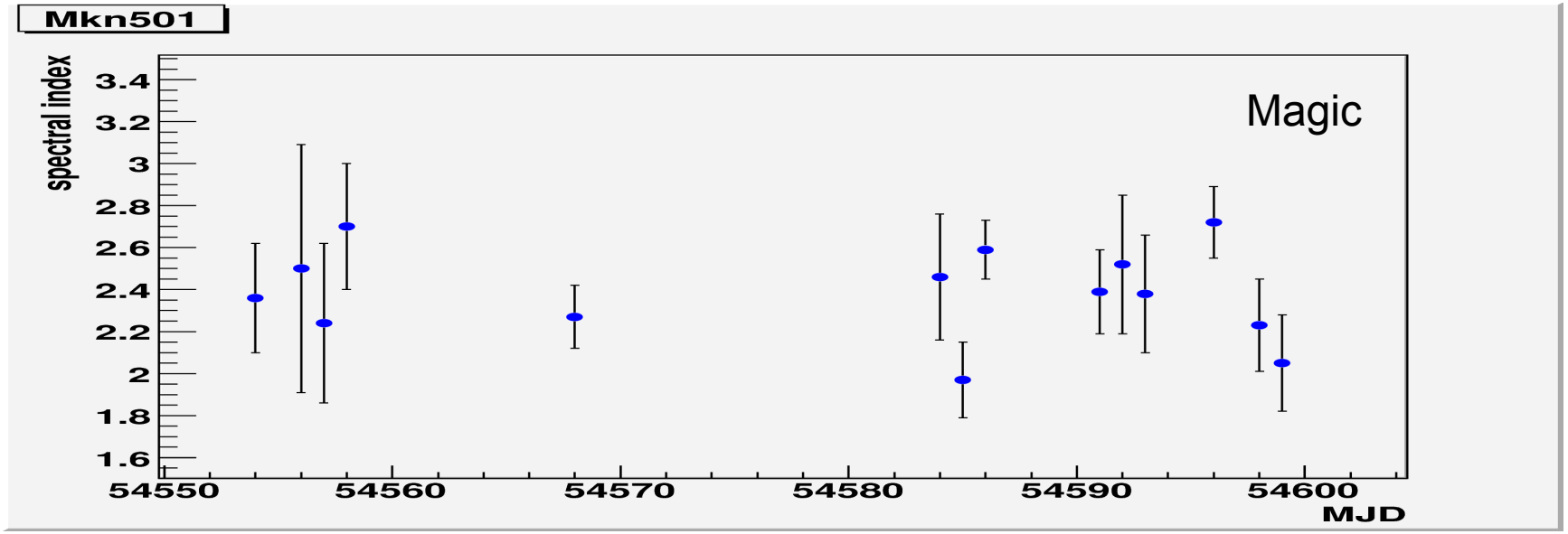
- **Strong variability at X-rays, some evidence for variability at VHEs**
- **Good agreement between Magic & Veritas lightcurve**

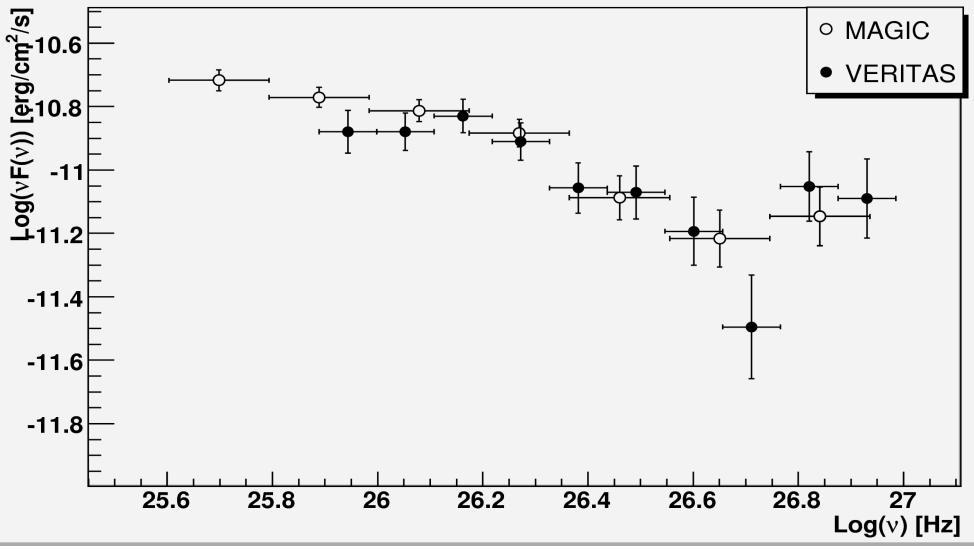
Magic Energy spectra





Good agreement between dark night & moon spectrum





Magic Photon index for four high / low regions in X-ray

MJD	alpha	N_0 [TeV^{-1} cm^{-2} s^{-1}]	chi2/ndf
54554-54559	-2.46 +/- 0.14	(0.87 +/- 0.11) e-10	1.98/4
54568-54571	-2.40 +/- 0.14	(0.14 +/- 0.09) e-9	2.3/4
54584-54590	-2.46 +/- 0.10	(0.11 +/- 0.01) e-9	2.93/3
54591-54599	-2.55 +/- 0.06	(0.15 +/- 0.01) e-9	5.20/4

- **No evidence for spectral variations in Magic data**
- **Good agreement between Magic & Veritas energy spectrum**

Summary

- ~30h of Magic dark night and moon data analyzed
- Average flux level ~30-40% Crab
- Some evidence for flux variations but no evidence for spectral variations
- Good agreement between Magic & Veritas lightcurve & energy spectrum
- SED modeling will be presented by Konstancja