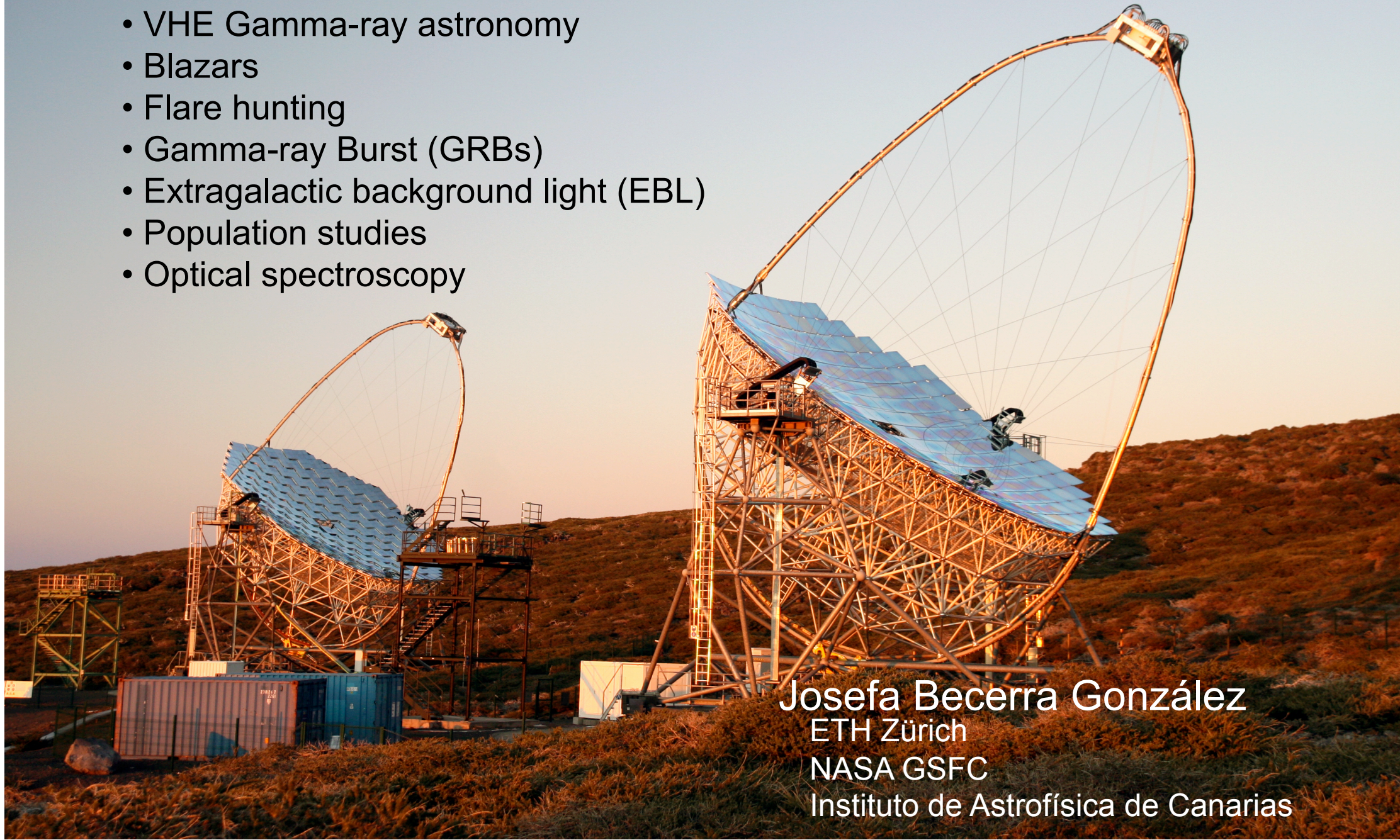


Keywords:

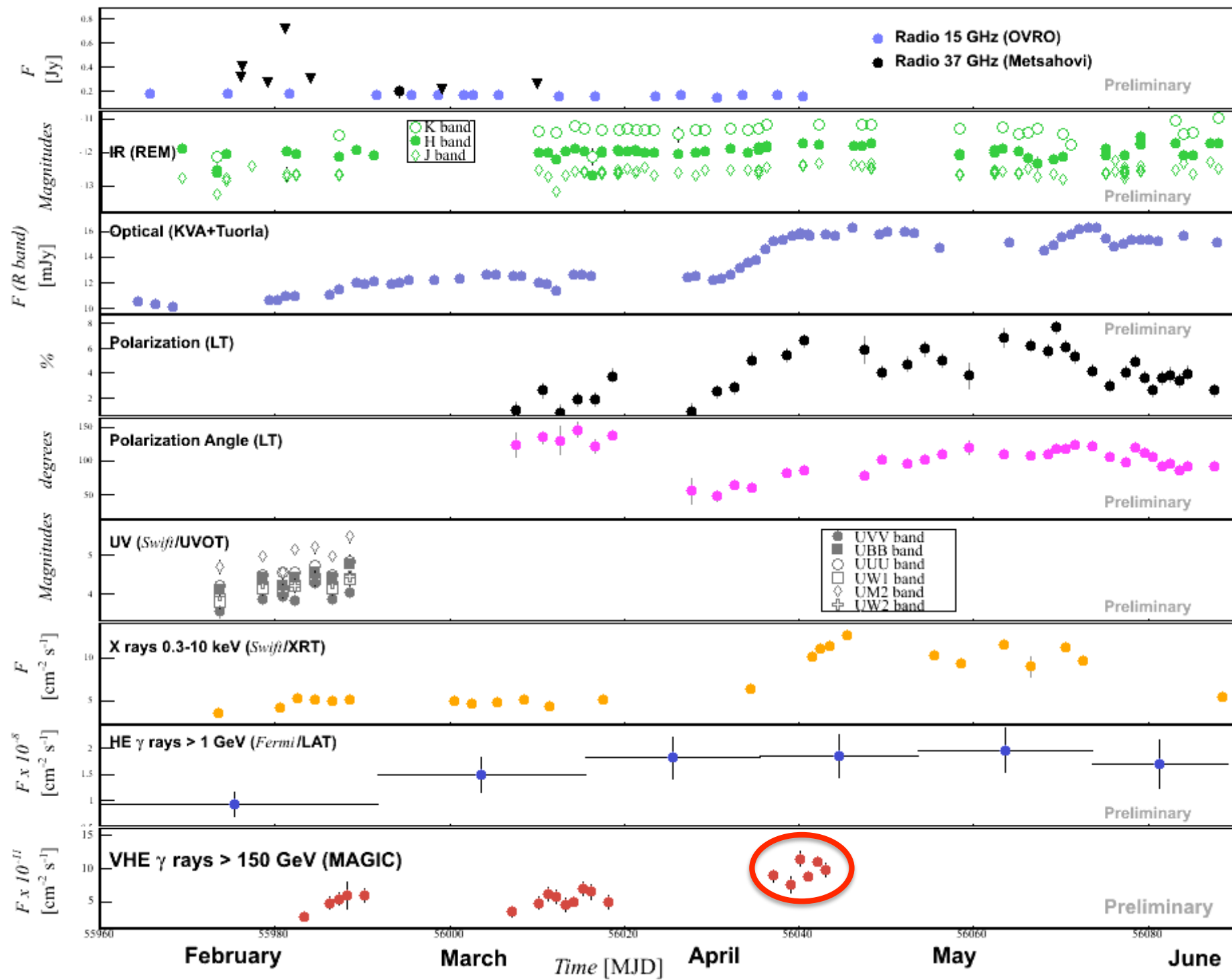
- VHE Gamma-ray astronomy
- Blazars
- Flare hunting
- Gamma-ray Burst (GRBs)
- Extragalactic background light (EBL)
- Population studies
- Optical spectroscopy



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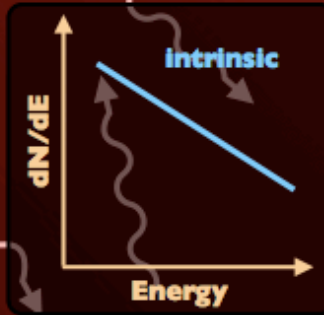
Probing the models with the blazar PG1553+113

- BL Lac object discovered by H.E.S.S./MAGIC in 2006
- Unknown redshift ($z > 0.4$ Danforth et al. 2010)
- Probably located in a galaxy cluster
- Have been observed by MAGIC since 2006
- March 2012 detected in high state in VHE gamma-rays (15% Crab Nebula flux $E > 150$ GeV), Atel 3977
- April 2012 flare detected in VHE regime ($\sim 20\%$ Crab Nebula flux $E > 150$ GeV), Atel 4069
- Most extensive multi-wavelength campaign



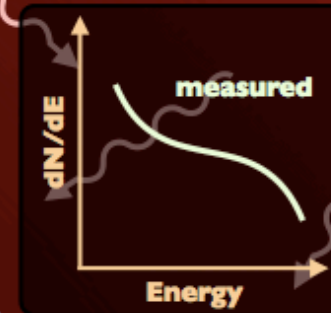
AGN

Stars and Dust
in Galaxies



HE/VHE γ -
Rays

UV/O/IR
Photons



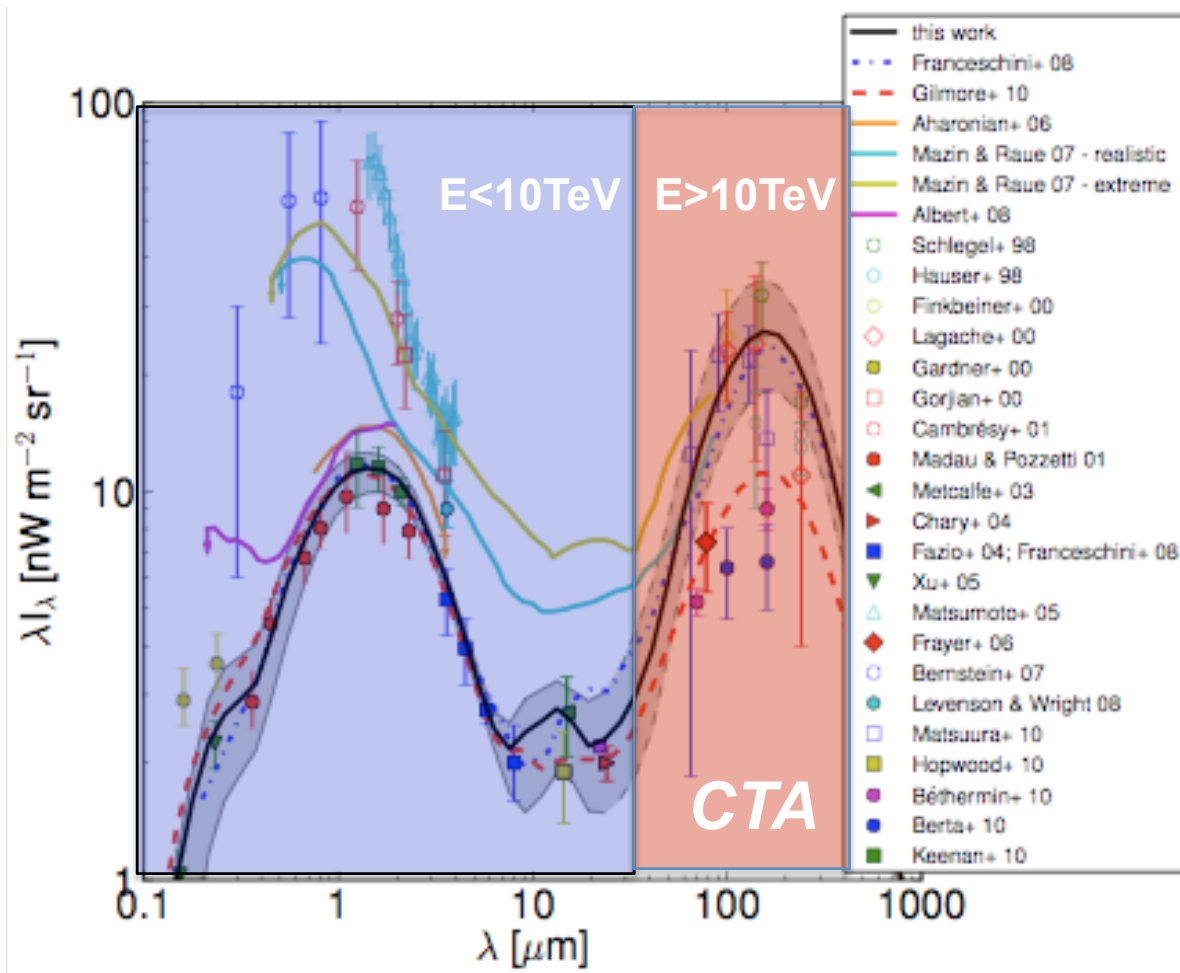
e^+e^-

$$E_\gamma E_{\text{EBL}} \approx 4(m_e c^2)^2 \approx 1 \text{ MeV}^2$$
$$E_{\text{EBL}} \sim \text{eV} \rightarrow E_\gamma \sim \text{TeV}$$



Nikishov (1962), Jelley (1966), Gould & Schreder (1966)

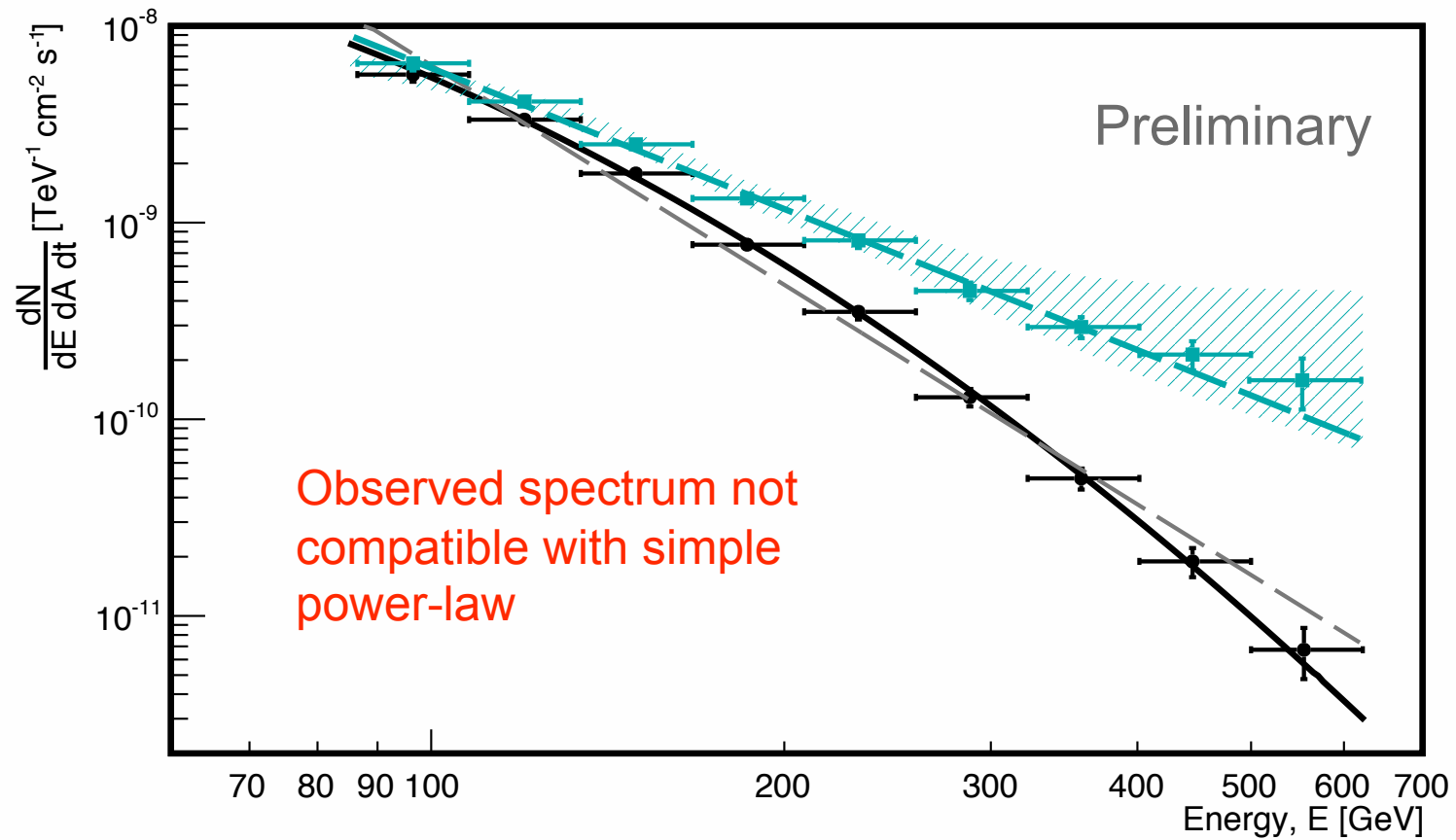
Credits: Martin Raue



Dominguez et. al. 2011

- Attenuation effect important for $E > 100 \text{ GeV}$
($\lambda_{\text{max}}[\mu\text{m}] = 1.24 E_{\gamma}[\text{TeV}]$)
- Effect depends strongly on redshift and energy
- Distortion effect on the spectra

VHE spectrum during flare April 2012





www.iac.es/telescopes/IAM

Thanks!