Keywords:

- VHE Gamma-ray astronomy
- Blazars
- Flare hunting
- Gamma-ray Burst (GRBs)
- Extragalactic background light (EBL)
- Population studies
- Optical spectroscopy
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 (~20% Crab Nebula flux E>150 GeV), Atel 4069
• Most extensive multi-wavelength campaign
\[ E_\gamma E_{EBL} \approx 4(m_e c^2)^2 \approx 1 \text{ MeV}^2 \]
\[ E_{EBL} \sim \text{eV} \rightarrow E_\gamma \sim \text{TeV} \]

• Attenuation effect important for $E > 100$ GeV ($\lambda_{\text{max}}[\mu m] = 1.24 \ E\gamma[\text{TeV}]$)
• Effect depends strongly on redshift and energy
• Distortion effect on the spectra
VHE spectrum during flare
April 2012

Observed spectrum not compatible with simple power-law
Thanks!