Blazar log-parabolic spectra and EBL



MK501



Log parabolic photon spectra can be explained as due to Synchrotron radiation from a log-parabolic particle distribution (Massaro et al. 2004a A&A 413, 489, 2004b, A&A 422,103)



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SSC from a log parabolic electron distribution (Massaro et al. 2005, in press)



respectively. X-ray points are from Paper II, TeV points are simultaneous CAT data (Djannati-Atai et al. 1999). Solid lines are (dashed lines) by interaction with infrared EBL photons according to the LLL model by Dwek and Krennich (2005). In the Fig. 11. Two Spectral Energy Distributions of Mkn 501 during the low and high states observed on 7 and 16 April 1997. the spectra computed in a 1-zone SSC model for the SR and IC components. In the upper panel IC spectra have been absorbed lower panel EBL absorption was neglected.



Fig. 12. Two Spectral Energy Distributions of Mkn 501 during the high states observed on 7, 11 April 1997 (upper panel) and 1999). This solid lines are the spectra computed in a 2-zone SSC model for the SR and IC components, dashed lines are the 7, 16 April 1997 (lower panel). X-ray points are from Paper II, TeV points are simultaneous CAT data (Djannati-Atai et al. spectra of the high-energy flaring component and thick solid line is that of slowly evolving component.

Conclusions

- Spectral curvature observed around the Synchrotron peak is due to intrinsic curvature of emitting particle distribution
- SSC of a particle distribution distributed as a Log-Parabola implies intrinsic curvature around Inverse Compton peak leaving little room for curvature resulting from EBL absorption
- Absorption due to EBL could be significantly lower than previously thought
- Supported also by
 - Aharonian et al. 2005 A&A 437, 395
 Cut off energy in TeV spectrum of MKN421 (3.1TeV) lower than that of MKN501 (6.2 TeV), but redshift is very similar
 - Aharonian et al. 2005 astro/ph 0508073
 HESS detection of the "high redshift" Blazars: H2356-309 (z=0.165) and 1ES1101-232