Appendix F

Appendix B: Lightcurves and ALPHA plots
F.1 The complete daily lightcurve

The following pages present the daily lightcurves of Mkn 421 with more than 7 runs per night from February 2001 until June 2001 as recorded with the CT1 telescope in La Palma, altogether 259 hours of observation. As explained before, a simple flare model

\[ F(t) = a + \frac{b}{2(t-t_0)/c + 2-(t-t_0)/d} \]  

has been fitted to each night, if a simple straight line fit gave a reduced \( \chi^2/\text{NDF} \) worse than 1.5. As starting values have been chosen: \( a= \) the constant term from the line fit, \( b=8.0 \), \( c=d=25 \) minutes, \( t_0= \) the highest flux point in the curve. The fastest flares are not covered by the fit. Some nights like 51966 contain flares that are very fast and are significantly outside the flare model.
Figure F.2: Lightcurve of the nights 51930, 51931, 51932 and 51933
Figure F.3: Lightcurve of the nights 51934, 51935, 51936 and 51937
Figure F.4: Lightcurve of the nights 51938, 51939, 51940 and 51941
Figure F.5: Lightcurve of the nights 51942, 51928, 51929 and 51930
Figure F.6: Lightcurve of the nights 51959, 51960, 51961 and 51963
Figure F.7: Lightcurve of the nights 51964, 51966, 51968 and 51970
Figure F8: Lightcurve of the nights 51982, 51983, 51984 and 51985
Figure F.9: Lightcurve of the nights 51986, 51987, 51988 and 51989
Figure F.10: Lightcurve of the nights 51990, 51991, 51992 and 51993
Figure F.11: Lightcurve of the nights 51994, 51996, 51997 and 50210
Figure F.12: Lightcurve of the nights 52012, 52013 and 51927
F.2 The estimation of the background for the spectrum

For completeness the plots for the background estimation for the spectrum calculation are shown here. For each energy bin a ALPHA plot has been made and the background from zero up to 18° is estimated by means of a polynomial fit with two free parameters in the ALPHA region without signal. The fit regions have been chosen energy dependent and are: 30°-80° for energies below 1 TeV, 15°-70° for energies from 1 TeV to 5 TeV and 10°-50° for energies above 5 TeV. These values have been chosen to be adequate to the width of the ALPHA distribution of the signal (which becomes wider for lower energies) and to the shape of the background (which becomes more curved for higher energies).
Figure F.14: ALPHA plots for energies from 1.3 TeV to 7.5 TeV
Figure F.15: ALPHA plots for energies from 7.5 TeV to 31.6 TeV
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