T 87: Gamma-Astronomie 6

Zeit: Freitag 14:00–16:05 Raum: M105

T 87.1 Fr 14:00 M105

Overview of AGN Physics with the MAGIC Telescope — •Pratik Majumdar for the MAGIC-Collaboration — DESY, D-15738 Zeuthen, Germany

The MAGIC telescope with its 17-m diameter mirror and located on the Canary Island of La Palma is currently the largest single-dish Imaging Atmospheric Cherenkov Telescope. A major fraction of the MAGIC observational program is devoted to observations of extragalactic sources.The strategies of these observations are manifold: long time monitoring of known TeV blazars, detailed studies of blazars during flare states, organizing and participating in multiwavelength campaigns on most promising targets, and a search for new VHE γ-ray emitters. In this talk, I will summarise the recent highlights of MAGIC observations of extragalactic objects and underline possible physics consequences of new discoveries.

T 87.2 Fr 14:15 M105

H.E.S.S. Observations of AGN — •M. Raue for the H.E.S.S.-Collaboration — Max-Planck-Institut für Kernphysik, Heidelberg, Germany

The mechanism and production site of very high energy (VHE; E > 100 GeV) gamma-ray emission in active galactic nuclei (AGN) is still a highly debated subject. While the number of source grew steadily over the past years (∼25 sources today) and rich multi-wavelength data-sets are available, almost all of the AGNs with VHE gamma-ray emission belong to the source class of blazars. For Blazars, the jet axis is closely aligned to the line of sight to the observer and the emission is likely relativistic boosted. Radio galaxies, on the other hand, have a resolved jet and can therefore provide unique insides in the physics of relativistic plasma jets. Up to now, M 87 is the only firmly established VHE gamma-ray emitting radio galaxy. M 87 showed fast (∼days) outbursts in the VHE regime in 2005 and 2008, which lead to strong constraints on the size of the emission region. Flux variations with even shorter time-scales in the order of minutes have been detected from the blazars PKS 2155-304 and Mkn 501 during flaring states. Recent results from H.E.S.S. observations of AGNs will be presented and the implications of the results discussed.

T 87.3 Fr 14:30 M105

AGN monitoring with the MAGIC telescope in the 2007/2008 Season — •Konstancja Satalecka[1], Michael Backes[2], Marlene Doert[2], Ching-Cheng Hsu[3], Elisa Bernardini[1], Pratik Majumdar[1], and Robert Wagner[3] for the MAGIC-Collaboration — [1]DESY, D-15738 Zeuthen, Germany — [2]Technische Universitaet Dortmund, D-44221 Dortmund, Germany — [3]Max-Planck-Institut fuer Physik, D-80805 Muenchen, Germany

So far almost one third of the objects detected in VHE γ-rays are blazars, i.e. Active Galactic Nuclei (AGNs) which contain relativistic jets pointing towards the observer. Due to observation-time constraints, they are mostly observed during flaring episodes or short multiwavelength campaigns. Those observations are very valuable, nevertheless in order to gain a more complete understanding of the blazar phenomenon and to constrain theoretical models, long-term studies are essential. Observations scheduled independently of any knowledge of the source state provide us with an unbiased distribution of the flux states. This information is needed for the determination of flaring state probabilities and for estimating the statistical significance of possible correlations between TeV flaring states and other observables, e.g. neutrino events. AGN monitoring can also serve to trigger multiwavelength Target of Opportunity observations in TeV or other wavelengths. These are particularly interesting in a context of "orphan" (without counterparts in other wavebands) TeV flares. In 2007/8 MAGIC has monitored three TeV blazars: Mrk501, Mrk421, and 1ES 1959+650. We present preliminary results of these observations.

T 87.4 Fr 14:45 M105

Suche nach korrelierter Aktivität in Multiwellenlängen-Lichtkurven von Blazaren — Max Anton Kastendieck[1], •Dieter Horns[1] und Martin Raue[2] — [1]Institut für Experimentalphysik der Universität Hamburg — [2]Max-Planck-Institut für Kernphysik in Heidelberg

Bei einigen Galaxien werden die Helligkeit und das elektromagnetische Spektrum nahezu vollständig von der Emission der Kernregion dominiert. Man nennt sie aktive galaktische Kerne (AGN). Im Zentrum eines AGN wird ein Supermassives Schwarzes Loch vermutet, welches großskalig relativistische Plasmaausflüsse (Jets) verursacht. AGNs sind bis zu 1000 mal heller und seltener als normale Galaxien und zeigen signifikante veränderliche Emissionen in allen Wellenlängenbereichen. Blazare sind AGNs, deren Jets vermutlich entlang der Sichtlinie verlaufen.

Seit 2003 werden die optischen Helligkeiten von 66 Blazaren mit den ROTSE (Robotic Optical Transient Search Experiment) Teleskopen beobachtet. In diesem Vortrag werden optische, Röntgen- und Gamma-Lichtkurven verschiedener Blazare gezeigt und auf mögliche Korrelationen untersucht. Insbesondere können optische Beobachtungen von Blazaren geeignete Trigger für Nachfolgebeobachtungen mit anderen bodengestützten Instrumenten liefern (z.B. Beobachtung von Gammastrahlung, Neutrinos).

T 87.5 Fr 15:00 M105

The June 2008 flare of Markarian 421 from optical to TeV energies, as observed by AGILE, RXTE, Swift, GASP-WEBT, MAGIC and VERITAS — •Konstancja Satalecka[1], Ching-Cheng Hsu[2], Jeffrey Grube[3,4], Robert Wagner[2], Elisa Bernardini[1], and Pratik Majumdar[1] — [1]DESY, D-15738 Zeuthen, Germany — [2]Max-Planck-Institut für Physik, D-80805 München, Germany — [3]School of Physics and Astronomy, University of Leeds, Leeds, LS2 9JT, UK — [4]School of Physics, University College Dublin, Belfield, Dublin 4, Ireland

We present optical, X-ray, high energy ($\lesssim$ 30 GeV) and very high energy ($\gtrsim$ 100 GeV; VHE) observations of the high-frequency peaked blazar Mrk 421 taken between 2008 May 24 and June 23. A flaring state in high energy γ-ray was detected by AGILE. In hard X-rays (20-60 keV) SuperAGILE resolved a 5-day flare (June 9-15). SuperAGILE, RXTE/ASM and Swift/BAT data reveal a correlated flaring structure between soft and hard X-rays. Simultaneous optical data from GASP-WEBT show hints of the same flaring behavior. A Swift/XRT observation near the flaring maximum reveal the highest 2-10 keV flux ever observed from Mrk 421. VHE observations with MAGIC and VERITAS (June 6-8) show the flux peaking in a bright state, well correlated with the X-rays. This extraordinary set of simultaneous data, covering a twelve-decade spectral range, allowed for a deep analysis of the spectral energy distribution and correlated light curves. The γ-ray flare can be interpreted within the framework of the synchrotron self-Compton model in terms of a rapid acceleration of leptons in the jet.

T 87.6 Fr 15:15 M105

MAGIC observations of Mkn 421 during multi-frequency campaigns in 2006 — •Stefan Rügamer[1], Igor Oya[2], Robert Wagner[3], and Jose Luis Contreras[2] for the MAGIC-Collaboration — [1]Institut für Theoretische Physik und Astrophysik, Universität Würzburg, Germany — [2]Universidad Complutense, Madrid, Spain — [3]Max-Planck-Institut für Physik, München, Germany

The well-know TeV blazar Mkn 421 has been observed by the MAGIC telescope in 2006 in the course of several multi-frequency campaigns. During those individual campaigns, the Suzaku satellite, XMM Newton and Integral provided simultaneous X-ray coverage, accompanied by optical monitoring with the KVA telescope. Through the Whipple AGN monitoring programme quasi-simultaneous VHE observations are available.

MAGIC detected Mkn 421 each day of these campaigns with high significance, establishing once more flux variability on nightly scales for this object. For certain nights, the integral flux > 200 GeV exceeded the one of Crab significantly. In this talk, the results of the MAGIC observations will be presented in detail.

T 87.7 Fr 15:30 M105

MAGIC observations of the distant quasar 3c279 in 2006 and 2007 — •Karsten Berger[1], Pratik Majumdar[2], Elina Lindfors[3], Elisa Prandini[4], Manel Errando[5], and Masahiro Teshima[6] for the MAGIC-Collaboration — [1]University Lodz, Lodz, Poland — [2]Deutsches Elektronen-Synchrotron (DESY) Zeuthen, Germany — [3]Tuorla Observatory, Piikiö, Finland — [4]Dipartimento di Fisica, Università di Padova and INFN sez. di Padova, Italy — [5]Institut de

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This contribution has been moved to T83.9.

Gruppenbericht T 87.8 Fr 15:45 M105

Aktueller Stand des DWARF Projektes zur Langzeitbeobachtung von Blazaren — •Thomas Bretz für die DWARF-Kollaboration — Universität Würzburg, Deutschland

Seit einigen Jahren sind abbildende Luft-Cherenkov-Teleskope der zweiten Generation in Betrieb, welche sich im Vergleich zu den Vorgängerexperimenten durch eine niedrigere Energieschwelle und höhere Sensitivität auszeichnen. Um aber Langzeitstudien von bekannten, leuchtstarken Quellen zu betreiben steht kaum Beobachtungszeit zur Verfügung.

Zu diesem Zweck wird gerade eines der früheren HEGRA-Teleskope im Rahmen des DWARF Projektes technologisch überarbeitet und wieder in Betrieb genommen. Die wesentlichen Neuerungen sind ein verbessertes Antriebssystem, eine größere Spiegelfläche und eine auf Silizium-Photodetektoren basierende Kamera. Dadurch kann eine deutliche Verbesserung der Sensitivität erreicht werden.

Der Vortrag gibt eine Übersicht über den technischen Aufbau, sowie den aktuellen Stand der Aufbauarbeiten.