T 82: Gamma-Astronomie 1

Zeit: Montag 17:00–19:20 Raum: M218

Gruppenbericht T 82.1 Mo 17:00 M218

MAGIC results on galactic sources — •Tobias Jogler for the MAGIC-Collaboration — MPI for Physics, Munich, Germany

MAGIC is an Imaging Atmospheric Cherenkov Teleskop (IACT) operated on the Canary Island La Palma.MAGIC has an energy threshold of 25 GeV and thus expands the energy domain of IACTs to an new lower region. With this sensitive Instrument we observed several galactic sources in very high energy gamma rays (E > 50 GeV). In this talk we will present the new results on the most interesting of these sources like the Crab Pulsar and the binary system LS I +61 303.

T 82.2 Mo 17:20 M218

MAGIC observations of the Crab Pulsar — •Takayuki Saito[1], Adam Nepomuk Otte[2], Michael Rissi[3], Thomas Schweizer[1], Maxim Shayduk[1], Eckart Lorenz[1], Razmik Mirzoyan[1], and Masahiro Teshima[1] for the MAGIC-Collaboration — [1]Max-Planck-Institut fuer Physik, Muchen, Germany — [2]University of California, Santa Cruz, USA — [3]ETH Zurich, Switzerland

The new observations of the Crab pulsar with the MAGIC telescope by using the analog sum trigger provide a threshold of 25 GeV. This allows one a detailed discussion on the physics of pulsed emission from Crab. As of today, mainly two models try to explain the emission of GeV gamma radiation from the Crab pulsar. These are the outer gap and the polar cap models. Measurements at very upper end of the spectrum may allow one to distinguish between the two models. A discussion on this topic will be presented.

T 82.3 Mo 17:35 M218

MAGIC Upper Limits on 13 X-ray bright high peaked BL Lac objects (HBLs) — •Daniel Höhne-Mönch for the MAGIC-Collaboration — Universität Würzburg, Germany

Due to their double-peaked spectral energy distribution with the second peak at very high energies (VHE), HBLs are a dedicated source class for observations with imaging air Cherenkov telescopes. From 2006 to 2008, MAGIC observed 13 previously undetected X-ray bright northern HBLs with (i) X-ray flux at 1 keV above 2 uJy and (ii) redshift z<0.4 for observations up to 30 deg zenith angle or z<0.15 for observations up to 45 deg zenith angle. Here we report upper limits on their VHE gamma ray flux above 200 GeV at unprecedented sensitivity and obtain constraints on the local luminosity function of HBLs.

T 82.4 Mo 17:50 M218

Discovery of a very high energy gamma-ray signal from the 3C 66A/B region — •Daniel Mazin[1], Manel Errando[1], and Elina Lindfors[2] for the MAGIC-Collaboration — [1]IFAE, Barcelona, Spain — [2]Tuorla Observatory, Univ. of Turku, Finland

The MAGIC telescope observed the region around the distant blazar 3C 66A for 54.2hr in 2007 August-December. The observations resulted in the discovery of a gamma-ray source at energies above 150GeV centered at celestial coordinates RA=2h23m12s and DEC=43deg0.7m (MAGICJ0223+430), coinciding with the nearby radio galaxy 3C 66B. Though the association of the signal with the distant blazar 3C 66A cannot be completely excluded, 3C 66B is more likely source of the emission. In this talk we will present the detection and discuss the origin of the very high energy gamma-ray signal.

T 82.5 Mo 18:05 M218

A joint H.E.S.S./MAGIC/VERITAS observation campaign on the radio galaxy M 87 in 2008 — •M. Raue[1], M. Beilicke[2], M. Hui[3], D. Mazin[4], R.M. Wagner[5], and S. Wagner[6] — [1]Max-Planck-Institut für Kernphysik, Heidelberg, Germany — [2]Department of Physics, Washington University, St.Louis, USA — [3]University of Utah, Salt Lake City, USA — [4]IFAE, Edifici Cn. Universitat Autonoma de Barcelona, Barcelona, Spain — [5]Max-Planck-Institut für Physik, Munich, Germany — [6]Landessternwarte Heidelberg, Heidelberg, Germany

for the H.E.S.S, MAGIC and VERITAS Collaborations.

The giant elliptical radio galaxy M 87 is the closest known extragalactic object emitting very-high-energy (VHE) γ-rays. The prominent jet of M 87 was extensively studied throughout the electromagnetic spectrum in the past revealing a complex structure resolved at radio, optical and X-ray energies. Knots in the jet indicate active regions, possibly associated with particle acceleration to ultra-relativistic energies. However, the origin of the measured VHE γ-rays is still unknown. No clear correlation of the VHE γ-rays with other wavelengths was found so far, whereas the size of the VHE emitting region is strongly constrained by the detection of variability on time-scales of days in 2005 and 2008. In a joint effort, H.E.S.S., MAGIC and VERITAS performed an intensive, coordinated monitoring campaign on M 87 in 2008 with a total coverage of > 120 h of observation time. The motivation, coordination, results and implications for future campaigns are discussed.

T 82.6 Mo 18:20 M218

New results from H.E.S.S. observations of galaxy clusters — •Wilfried Domainko[1], Dalobor Nedbal[2], Hinton Jim[3], and Olivier Martineau-Huynh[4] for the H.E.S.S.-Collaboration — [1]Max-Planck-Institut für Kernphysik, Heidelberg, Germany — [2]Institute of Particle and Nuclear Physics, Charles University, Prague, Czech Republic — [3]University of Leeds, UK — [4]Laboratoire de Physique Nucléaire et de Hautes Energies, Universités Paris VI & VII, France

Clusters of galaxies are believed to contain a significant population of cosmic rays. From the radio and probably hard X-ray bands it is known that clusters are the spatially most extended emitters of non-thermal radiation in the Universe. Due to their content of cosmic rays, galaxy clusters are also potential sources of VHE (>100 GeV) gamma rays. Recently, the massive, nearby cluster Abell 85 has been observed with the H.E.S.S. experiment in VHE gamma rays with a very deep exposure as part of an ongoing campaign. The results of the observation as well as the implications for the energy content in non-thermal particles for this cluster will be presented.

T 82.7 Mo 18:35 M218

H.E.S.S. Unidentified Sources. — •Omar Tibolla for the H.E.S.S.-Collaboration — Max-Planck-Institut fuer Kernphysik, P.O. Box 103980, D-69029 Heidelberg, Germany

H.E.S.S. is currently the most sensitive instrument in the very-high-energy (VHE; > 100 GeV) gamma-ray domain and has revealed many new sources along the Galactic Plane. After the very successful first VHE Galactic survey of 2004/2005, H.E.S.S. continued and extended that survey in 2006/2007, discovering a number of new sources, many of which are unidentified.

While some of the unidentified H.E.S.S. sources present several positional counterparts and hence several different possible scenarios; so theiridentification is still unclear; some other instead have no counterparts at any other wavelength; especially the lack of an X-ray counterpart put serious constraints, suggesting an hadronic nature for this kind of sources and allowing the so called dark accelerator scenario in which only the protons are accelerated at VHE giving rise to a light signal visible only at TeV energies, but not at any other wavelength.

T 82.8 Mo 18:50 M218

Very High Gamma-Ray Emission from the Binary Pulsar PSR B1259-63 around the 2007 Periastron as Observed by HESS — •Matthias Kerschhaggl for the H.E.S.S.-Collaboration — Humboldt University, Berlin, Germany

PSR B1259-63 represents a system where a radio pulsar is orbiting a massive Be star in a highly eccentric orbit (e=0.87). Interactions between the pulsar wind and the stellar matter and radiation fields can provide shock mechanisms that accelerate particles to very high energies (VHE). These interactions are thought to become most efficient around periastron passage where the two objects are separated by the minimal distance of 0.7 AU. The system is known as VHE emitter since its discovery in the TeV regime around the 2004 periastron by HESS. Again in 2007 a gamma ray signal with a total significance of 9 sigma could be detected in HESS observations within a livetime of ˜53h from this source. Moreover data from 2005 and 2006 where the source was monitored far away from periastron for the first time will be presented. The talk will focus on the analysis of the data and its interpretation. With the example of PSR B1259-63 at hand, possible mechanisms for the generation of VHE gamma rays in TeV binaries will be discussed.

T 82.9 Mo 19:05 M218

HESS J0637 + 057: ein neues TeV-Gammastrahlung emittierendes Binärsystem? — •Julia Brucker[1], Joanna Skilton[2], James Hinton[2], Mamta Pandey-Pommier[3], Teddy Cheung[4], Alexandre Marcowith[5], Guillaume Dubus[6], Stefan Funk[7], Olaf Reimer[7], Armand Fiasson[5], Yves Gallant[5] und Felix Aharonian[8] — [1]ECAP, Universität Erlangen — [2]University of Leeds — [3]University of Leiden — [4]National Aeronautics and Space Administration — [5]Universite Montpellier II — [6]Laboratoire d'Astrophysique de Grenoble — [7]Stanford University — [8]Dublin Institute for Advanced Studies

Mit dem H.E.S.S.-Cherenkov-Teleskopsystem wurde 2006 im Bereich des Monoceros Supernova-Überrestes die punktförmige TeV-Gammastrahlungsquelle HESS J0637 + 057 entdeckt. Da die Quelle mit dem massiven Stern MWC 148 assoziiert ist, gehört HESS J0632+057 mit großer Wahrscheinlichkeit zu der seltenen Klasse der TeV-Gammastrahlung emittierenden Binärsysteme. Zusätzlich mit XMM-Newton aufgenommene Daten offenbarten 2008 ebenfalls eine variable, nicht-thermische Punktquelle koinzident mit MWC 148. Darüberhinaus zeigten auch Beobachtungen mit VLA und GMRT eine Punktquelle an der Position des Sterns. Diese neuen Beobachtungen bekräftigen die Annahme, dass es sich bei HESS J0632+057 tatsächlich um ein massives Röntgen-Binärsystem handelt und werden in diesem Vortrag vorgestellt.