T 94: Gammaastronomie III

Zeit: Mittwoch 14:00–16:15 Raum: HG VII

T 94.1 Mi 14:00 HG VII

Non-thermal particle acceleration in the Globular Cluster Terzan 5? — •Peter Eger[1], Wilfried Domainko[2], and Andre-Claude Clapson[2] — [1]ECAP, Universität Erlangen-Nürnberg — [2]Max-Planck-Institut für Kernphysik, Heidelberg

Terzan 5 is the galactic Globular Cluster hosting the largest population of known millisecond pulsars, which are a potential source of high-energy electrons due to acceleration processes in their magnetospheres. These electrons can produce very-high-energy gamma-rays via Inverse-Compton up-scattering of low-energy photons, accompanied by synchrotron emission in X-rays.

Using the data of an archival Chandra observation, pointed towards Terzan 5, we detect significant extended X-ray emission, which decreases smoothly in surface brightness with increasing distance from the cluster core. This result makes Terzan 5 a promising target for observations with ground-based gamma-ray telescopes to test the synchrotron scenario.

T 94.2 Mi 14:15 HG VII

Diffuse gamma-ray emission model — •Andreas Hillert, Sabrina Casanova, and Werner Hofmann for the H.E.S.S.-Collaboration — MPI-K Heidelberg

The diffuse gamma-ray emission in our Galaxy is produced by electrons interacting mainly with radiation fields and protons which interact with ambient gas. By simulating a population of galactic sources, which accelerate protons and electrons, distributed according to the populations of supernova remnants and pulsars at radio wavelengths, we estimate the diffuse gamma-ray emission at GeV and TeV energies from intermediate and high latitudes above the Galactic Plane. We present here the predictions of our model.

T 94.3 Mi 14:30 HG VII

Broadband multi-wavelength campaign on PKS 2005-489 — •Sarah Kaufmann[1], Marcus Hauser[1], Karl Kosack[2], Martin Raue[3], Omar Tibolla[3], Francesca Volpe[3], and Stefan Wagner[1] for the H.E.S.S.-Collaboration — [1]Landessternwarte, ZAH, Universität Heidelberg, Königstuhl, D69117 Heidelberg, Germany — [2]IRFU/DSM/CEA, CE Saclay, F-91191 Gif-sur-Yvette, Cedex, France — [3]Max-Planck-Institut für Kernphysik, Heidelberg, P.O. Box 103980, D69029 Heidelberg, Germany

The spectral energy distribution (SED) of high-frequency peaked BL Lac objects (HBL) is characterized by two peaks: one in the UV-X-ray and one in the GeV-TeV regime. An interesting object for analyzing these broadband characteristics is PKS 2005-489, which in 2004 shows the softest TeV spectrum ever measured. In 2009, a multi-wavelength campaign has been conducted with, for the first time, simultaneous observations by H.E.S.S. (TeV), Fermi/LAT (GeV), RXTE (keV), Swift (keV, UV, optical) and ATOM (optical) to cover the two peaks of the SED. During this campaign PKS 2005-489 underwent a high state in all wavebands which gives the opportunity to study in detail the emission processes of a high state of this interesting HBL.

T 94.4 Mi 14:45 HG VII

Detaillierte Untersuchung hochenergetischer Gammastrahlung aus der Region um Vela X — •Bernhard Glück für die H.E.S.S.-Kollaboration — ECAP, Universität Erlangen-Nürnberg

Das H.E.S.S. I Experiment ist ein System aus vier abbildenden Cherenkov-Teleskopen. Mit diesem Experiment können Quellen hochenergetischer Gammastrahlung zeitlich, spektral und räumlich aufgelöst werden. Die Region um den Vela X Pulsar wurde von 2004 bis 2009 mit den H.E.S.S. Teleskopen beobachtet. Dabei wurde eine über zwei Grad ausgedehnte TeV Gammastrahlungsquelle gefunden, die sich in südlicher Richtung von der Position des Vela X Pulsar PSR B0833-45 erstreckt. Der Vortrag gibt einen aktuellen Überblick über die Morphologie des Pulsarwindnebels.

T 94.5 Mi 15:00 HG VII

The Extended H.E.S.S. Galactic Plane Survey — •Ryan C. G. Chaves for the H.E.S.S.-Collaboration — Max-Planck-Institut für Kernphysik, Saupfercheckweg 1, 69117 Heidelberg, Germany

The High-Energy Stereoscopic System (H.E.S.S.), located in the Khomas Highland of Namibia, is an array of four imaging atmospheric-Cherenkov telescopes designed to detect gamma-rays in the very-high-energy (VHE; E > 100 GeV) domain. Its high sensitivity and large field-of-view (5 deg.) make it an ideal instrument to perform a comprehensive survey of the Galaxy. Using data collected in 2004, the Galactic Plane Survey (GPS) of the inner Galaxy led to the detection of 14 VHE gamma-ray-emitting sources within the region of Galactic longitude $|l| < 30$ deg and latitude $|b| < 3$ deg. Since then, the H.E.S.S. GPS has been extended significantly in longitude, out to $l = 275$ deg and $l = 60$ deg. The effective exposure has also greatly increased in the originally surveyed region. This extended, deeper survey now encompasses most of the first and fourth Galactic quadrants and has led to the discovery of numerous additional VHE gamma-ray emitters with high statistical significance. The current status and latest results of the extended H.E.S.S. GPS will be presented.

T 94.6 Mi 15:15 HG VII

MAGIC results on galactic sources — •Emiliano Carmona for the MAGIC-Collaboration — Max-Planck-Institut für Physik, München, Germany

MAGIC is a system of two telescopes located on the Canary island of La Palma. It is also the array of Imaging Cherenkov Telescopes with the lowest energy threshold, reaching 25 GeV for some dedicated observations. The scientific program of MAGIC includes several galactic objects like binary systems, pulsars, pulsar wind nebulae and supernova remnants. The latest results obtained for the most interesting of these sources like the Crab pulsar above 25 GeV or the latest results from the binary system LS I+61 303 will be presented. The impact of the stereo observations with the second telescope in future galactic observations will also be discussed.

T 94.7 Mi 15:30 HG VII

New unidentified H.E.S.S. Galactic sources. — •Omar Tibolla[1], Okkie de Jager[2], Wilfried Domainko[1], Sarah Kaufmann[3], Nukri Komin[4], Karl Kosack[5], and Werner Hofmann[1] for the H.E.S.S.-Collaboration — [1]Max-Planck-Institut für Kernphysik, Heidelberg, P.O. Box 103980, D69029 Heidelberg, Germany — [2]Unit for Space Physics, North-West University, Potchefstroom 2520, South Africa — [3]Landessternwarte, Universität Heidelberg, Königstuhl, D 69117 Heidelberg, Germany — [4]CEA, Irfu, SPP, Centre de Saclay, F-91191 Gif-sur-Yvette, France — [5]CEA, Irfu, SAP, Centre de Saclay, F-91191 Gif-sur-Yvette, France

H.E.S.S. is one of the most sensitive instruments in the very high energy (VHE; > 100 GeV) gamma-ray domain and has revealed many new sources along the Galactic Plane. After the successful first VHE Galactic Plane Survey of 2004, H.E.S.S. has continued and extended that survey in 2005-2008, discovering a number of new sources, many of them are unidentified. While some of the unidentified H.E.S.S. sources have several positional counterparts and hence several different possible scenarios for the origin of the VHE gamma-ray emission, their identification remains unclear. Others have so far no counterparts at any other wavelength. Particularly, the lack of an X-ray counterpart puts serious constraints on emission models. Several newly discovered sources will be discussed here.

T 94.8 Mi 15:45 HG VII

observations of westerlund 2 with the H.E.S.S. telescope — •Emma de Ona Wilhelmi[1], Andreas Foerster[1], and Olaf Reimer[2] for the H.E.S.S.-Collaboration — [1]Max-Planck-Institut fur Kernphysik, P.O. Box 103980, D 69029 Heidelberg, Germany — [2]Institut fur Astro- und Teilchenphysik, Leopold-Franzens-Universitat Innsbruck, A-6020 Innsbruck

The observations of the field of view of Westerlund 2 with the H.E.S.S. telescopes have led to the discovery of an extended VHE source, HESS J1023-575, that has been previously associated with either the massive WR binary system WR 20a, the young stellar cluster Westerlund 2 or cosmic rays accelerated in bubbles or at their termination shock and interacting with their environment. The extension and non-variability of the VHE source disfavour the two first scenario and an unambiguous identification of the source is still on hold. The Fermi satellite also showed recently two bright gamma-ray pulsars in the same region. In order to investigate the origin of the VHE emission, re-observations have been performed with the H.E.S.S. telescope during 2008 and 2009.

These new results shed light on the identification and morphology of HESS J1023-575. We will present the new H.E.S.S. observations and discuss the possible counterpart

T 94.9 Mi 16:00 HG VII

Ursprung der TeV-Strahlung von Westerlund 1 — •Milton Virgilio Fernandes[1], Dieter Horns[1], Stefan Ohm[2] und Emma de Ona-Wilhelmi[2] — [1]Institut für Experimentalphysik der Universität Hamburg, Deutschland — [2]Max-Planck-Institut für Kernphysik, Heidelberg, Deutschland

Neben schalenförmigen Supernova-Überresten gelten junge, massive Sterne mit intensiven Sternenwinden als mögliche Kandidaten für die Beschleunigung der geladenen kosmischen Strahlung. Westerlund 1 ist mit einem Alter von ungefähr 5 Mio. Jahren und einer Mindestmasse von ca. 10^5 $M_\odot$ ein junger und der bislang massereichste Sternhaufen in unserer Milchstraße – nur ca. 4 kpc entfernt. Neben mind. 24 Wolf-Rayet-Sternen, 6 gelben Hyperriesen, 4 roten Riesen und einem Leuchtkräftigen Blauen Variablen besteht die massereiche Sternpopulation aus weiteren ∼100 OB-Superriesen. Beobachtungen im Röntgen- und im Gammabereich zeigen ausgedehnte Emissionen, die sich nicht mit thermischer Abstrahlung erklären lassen. In diesem Beitrag werden mögliche Szenarien der Beschleunigung der hochenergetischen Teilchen und die TeV-Emission, die mit dem Cherenkov-Teleskopsystem H.E.S.S. beobachtet wurde, diskutiert.