



# THURSDAY COLLOQUIUM

Department of Physics, Tsinghua University

<http://www.phys.tsinghua.edu.cn/Colloquium/>

**Title** The origin of Cosmic Rays and Unidentified VHE sources

**Speaker** Omar Tibolla

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University of Würzburg

**Venue** Zheng Yu-Tong Lecture Hall, New Science Building

**&Date** 16:00, Feb 23, 2012

## Abstract

The riddle of the origin of Cosmic Rays is open since one century and no final answer has been provided so far. Gamma ray observations above 100 MeV reveal the sites of cosmic ray acceleration to energies where they are unaffected by solar modulation. In the last years the knowledge in this field of research widely increased, however almost 50% of the TeV ( $> 10^{12}$  eV) Galactic sources are still unidentified; at GeV ( $> 10^9$  eV) energies, 67% of EGRET sources were unidentified and also with the newer generation of gamma-ray satellites we have the same result: in fact, at low Galactic latitudes ( $b < 10$  deg), 62% of the Fermi LAT detected sources have no formal counterpart. Hence understanding the high energy unidentified sources will be a crucial brick in solving the whole riddle of Cosmic Rays origin.

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 which are unidentified. 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.

## Introduction to the Speaker

Omar Tibolla works at the Institute for Theoretical Physics and Astrophysics at the University of Würzburg, Germany. He is a young and outstanding scholar in the field of cosmic rays. Omar Tibolla has published many valuable results in important astronomical journals.

Main research interests:  
High Energy Astrophysics, Cosmic Rays, Supernovae Remnants, Pulsar Wind Nebulae, Unidentified Sources. And other aspects of High Energy Astrophysics (Active Galactic Nuclei, Starburst Galaxies, GammaRay Bursts, X-ray and gamma-ray binaries)

