PDF versions of previous colloquia and more information can be found in “events” at http://gcosmo.bao.ac.cn/

国台学术报告 NAOC COLLOQUIUM

2012 年 第 41 次 / Number 41, 2012

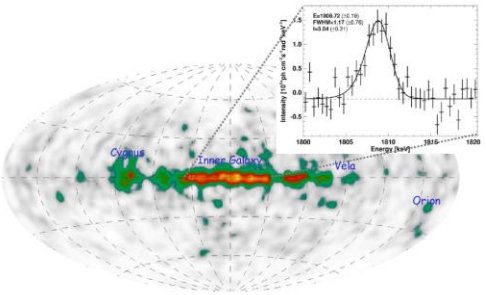
TIME: Wednesday, 3:00 PM, August 15, 2012 LOCATION: A601 NAOC

Astrophysics with Gamma-Rays from Cosmic Radioactivities

Prof. Roland Diehl (MPE, Garching, Germany)

Prof. Roland Diehl has primary research interests in gamma-ray astrophysics, specifically nuclear astrophysics with gamma-ray line astronomy from cosmic radioactivities. Research on the origin of 26Al radioactivity, and of 60Fe and 44Ti from supernovae, led to involvements in star formation, massive star structure and evolution, and supernova astrophysics. He has been co-Investigator of the COMPTEL instrument on NASA's Compton Gamma-Ray Observatory (1991-2000) and Co-PI of the SPI instrument on ESA's INTEGRAL Mission (since 2002). He is also the member of the German Physical Society (DPG), German Astronomers Society (AG) and Americal Physical Society (APS), Chairman of the Bethe Prize Committee of APS (2008/9), Advisory Board Member of the Joint Institute for Nuclear Astrophysics (JINA) (2004-2006), PI and Deputy Research Area Coordinator of Munich Cluster of Excellence "Origin and Evolution of the Universe", elected member Astroparticle Committee (KAT) of germany, steering Committee of EuroGenesis Program of the European Science Foundation and member of Senate of Max Planck Society.

Abstract



Radioactive isotopes are a common by-product of cosmic sources of nucleosynthesis, specifically of supernova and nova explosions, but also ejected from very massive stars in their winds. We can observe gamma-rays from such radioactive decays, and use those to learn about these sources. From 56Ni and 44Ti decays, we thus constrain the processes in the deep interiors of supernovae of types Ia and core-collapses, respectively. Long-lived isotopes 26Al and 60Fe tell us about their source population of massive stars, through decay gamma-rays and positrons. We thus have identified the regions in our Galaxy which are populated by massive stars at the peak of their activity. The radioactive ejecta decay in hot interstellar space around these sources and thus tell us about this special phase of the complex interstellar medium, which is hard to observe otherwise. The 26Al/60Fe isotope ratio is a sensitive test of massive-star structure before the core-collapse supernova. We discuss those astrophysical connections, and the lessons learned from measurements with gamma-ray telescopes during the epoch where such astronomy has been performed.

All are welcome! Tea, coffee, biscuits will be served at 2:45 P.M.

You are welcome to nominate speakers to Shude Mao (shude.mao@gmail.com), Licai Deng (licai@bao.ac.cn), Xuelei Chen (xuelei@cosmology.bao.ac.cn).