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

2013 年 第 57 次 / Number 57, 2013

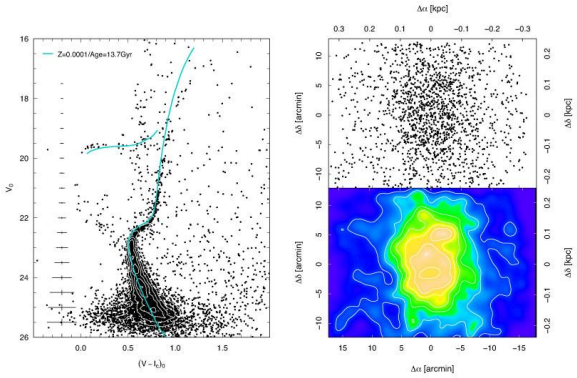
TIME: Wednesday, 2:30 PM, Oct. 16, 2013 LOCATION: A601 NAOC

Stellar populations of Galactic faint satellites

Dr. Sakurako Okamoto (KIAA/PKU)

Dr. Sakurako Okamoto is currently a postdoctoral research fellow at Kavli Institute for Astronomy and Astrophysics at Peking University. She obtained a Ph.D in Astronomy at University of Tokyo in 2010. She was a JSPS fellow at National Astronomical Observatory of Japan and a visiting fellow at University of Cambridge. Her current research is focused on the resolved stellar populations of nearby galaxies, ultra faint dwarf galaxies, and the Galactic halo.

Abstract



Dwarf galaxies around the Milky Way provide us a unique opportunity to investigate galaxy formation and evolution through their resolved stars. Most of them are considered to be both dynamically and chemically simple, with the high M/L ratio. Thanks to systematic surveys in the SDSS data archive, the number of Galactic dwarf satellites (dSph) is doubled in recent years. The newly discovered ultra faint dwarf (UFD) galaxies are roughly 10 to 100 times fainter than the well-known "classical" dSphs and even fainter than globular clusters, having amorphous morphology and too low surface brightness to be found by the photographic plate. Their star formation histories and detailed structural properties provide a clue to understanding of the galaxy formation at the faint-end and of the Galactic tidal effects for the satellite galaxies.

I will present the deep colour-magnitude diagrams (CMDs) of faint Galactic dSphs, including UFD galaxies. The images taken by Suprime-Cam imager on Subaru telescope are sensitive enough to derive the stellar ages based on the main sequence turn-off, and wide enough to study the spatial distribution of stars in each galaxy. The resulting CMDs show that the brighter galaxies have relatively younger populations than these of fainter ones. In the brighter dSphs, the younger populations are more spatially concentrated to the galaxy center than old stars, indicating that the star formation in the central region continued at least a few Gyr, consistent with the different spatial distributions of red and blue HB stars. On the other hands, the CMDs of the faintest satellites show a single epoch of star formation as a metal-poor Galactic globular cluster, and it is very different from those of massive star clusters which have multiple stellar generations. These results indicate that the gaseous matter in the progenitors of UFDs were removed more effectively than those of brighter dSphs at an occurrence of the initial star formation, and also the star formations in UFDs were regulated by different mechanisms from those of massive star clusters. I will also introduce an up-coming opportunity for studying Galactic Archeology by Hyper Suprime-Cam wide survey.

All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.

You are welcome to nominate speakers to Weimin Yuan (wmy@nao.cas.cn), Mei Zhang (zhangmei@bao.ac.cn), Licai Deng (licai@bao.ac.cn), Xuelei Chen (xuelei@cosmology.bao.ac.cn), Shude Mao (smao@nao.cas.cn)