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TIME: Tuesday, 3:00 PM, Apr. 02, 2013 **LOCATION: A601 NAOC**

Galaxy Formation and Evolution through Metals



Prof. Lisa Kewley (Australian National University)

Professor Lisa Kewley obtained her PhD in 2002 from the Australian National University on the starburst-AGN connection in luminous infrared galaxies. She moved to the US to begin a Harvard-Smithsonian CfA Fellowship where she worked on the star formation and metallicity properties of nearby galaxies. In 2004, she received a Hubble Fellowship which she took to the University of Hawaii to research the chemical and star formation history of galaxies. She joined that faculty at the University of Hawaii in 2007. Recently, Prof Kewley returned to Australia to begin a professorship in observational cosmology at the Australian National University. She has received the 2006 American Astronomical Society Annie Jump Cannon Award, the 2008 American Astronomical Society Newton Lacy Pierce Prize, and a National Science Foundation Early Career Award. She is currently an Australian Research Council Future Fellow.

Abstract

Chemical abundances in galaxies provide a fossil record of previous generations of star formation, modulated by galactic-scale gas flows. I will present the latest results from our investigation into the chemical evolution of galaxies, both locally, and at high redshift. Theory predicts that as a merger progresses, galaxy disks become disrupted by tidal effects, causing large radial gas flows toward the central regions where kpc-scale starbursts and AGN may be fueled. Isolated disk galaxies have strong chemical abundance gradients that may become disrupted during a merger. We have conducted the first investigation into chemical abundance gradients across the merger sequence. We show that abundance gradients and the presence of shocks evolve dramatically with merger progress, providing a smoking gun for galactic-scale gas flows in merging galaxies. Moving out in redshift, I present recent results from our investigation into the cosmic chemical history of galaxies. We have measured the chemical abundances for an unprecedented number of galaxies to $z \sim 1$, finding little evolution between $z \sim 1$ and the present day. At higher redshift, we exploit the power of gravitational lensing to investigate the chemical evolution in galaxies between $1 < z < 3$. We have measured the first metallicity gradient in a normal spiral galaxy at $z \sim 2$, showing a steeper gradient than observed in local spiral galaxies. I will discuss the implications of this result and the future of this field with the next generation of telescopes.



All are welcome! Tea, coffee, biscuits will be served at 2:45 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)