PMO Seminar on Cosmology

Speaker: Dr. Knneth Wong
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Host and Chair: Prof. Yin-Zhe Ma

**Title:** "An Independent Measurement of H0 from Lensed Quasars"
Date: 24th September (Thursday) 2020
Time: 9:00 SAST/**15:00 Beijing time/**16:00 JST
Zoom link: https://ukzn.zoom.us/j/97689318868
(connection starts ten minutes before the seminar)

Abstract: Strong gravitational lens systems with time delays between the multiple images are a powerful probe of cosmology, particularly of the Hubble constant (H0) that is key to probing dark energy, neutrino physics, and the spatial curvature of the Universe, as well as discovering new physics. The H0LiCOW/TDCOSMO project has measured H0 from lensed quasars using deep Hubble Space Telescope and AO imaging, precise time delay measurements from the COSMOGRAIL monitoring project, a measurement of the velocity dispersion of the lens galaxies, and a characterization of the mass distribution along the line of sight. Assuming well-motivated physical profiles for the lens galaxies, our latest results constrain H0 to be ~74 km/s/Mpc for a flat Lambda CDM cosmology, with a precision of ~2%. These results are consistent with independent determinations of H0 using type Ia supernovae calibrated by the distance ladder method, and are in >3-sigma tension with the results of Planck CMB measurements, hinting at possible new physics beyond the standard LCDM model and highlighting the importance of this independent probe. Relaxing our assumptions on the form of the lens galaxy mass profiles and only allowing kinematic constraints, we can constrain H0 to ~8% precision. Including information from external data sets can improve the precision to ~5%. Future observations to increase the sample size and improve the precision of the measurements will be key to resolving the current tension in H0.
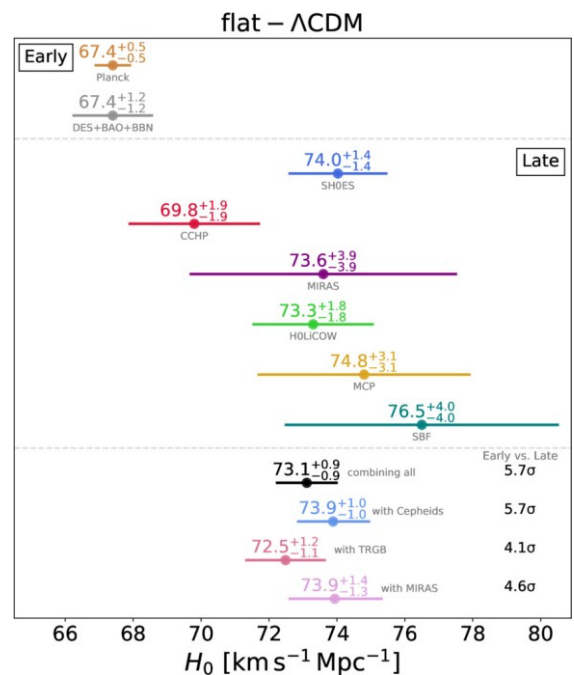
Speaker Info: Dr. Kenneth Wong obtained his Ph.D. from the University of Arizona, where he worked with Prof. Ann Zabludoff on environments of strong lens galaxies and the effects of projected structure in massive cluster-scale lenses. He then worked as an EACOA fellow, first at ASIAA working on strong lens modeling and time-delay cosmography, and then at NAOJ, where he worked on several projects including the Hyper Suprime-Cam SSP. He is currently a project researcher at the Kavli IPMU, where he has continued his work on time-delay cosmography as part of the H0LiCOW/TDCOSMO collaboration.