Contribution ID: **591** Type: **Plenary talk**

Establishing an Evolutionary Picture of Fast Radio Bursts (FRBs)

Tuesday, 9 July 2024 09:00 (30 minutes)

Human's perception and philosophy of the cosmos depend on our collective sensors. Modern optical sky surveys in the 20th century gave rise to the concept of dynamic Universe, one mysterious manifestation of which is fast radio bursts (FRBs). Look like a radio pulse from a neutron star, the FRBs can be 20 orders of magnitude brighter and, if exist, can be seen as far as redshift of z=10, together with the presumed first generation of galaxies and supermassive blackholes. Showing potential for breakthroughs in astrophysics, the discovery of FRBs was awarded the 2023 Shaw's prize in astronomy. We built the largest radio telescope, namely, the Five-hundred-meter Aperture Spherical radio Telescope (FAST), which has been leading the field of characterizing repeating FRBs ever since the inception of FAST's operation in 2020. With close to 100 FAST-based FRB papers, including 5 on Naturand 2 on Science, we started to reveal the evolution of repeating FRBs. We manage to characterize the environment and potentially the age of an active FRB with a single physical parameter, namely, sigma_RM, which can be derived from observation and reflects the complexity of the plasma enshrouding the FRBs. We are also working on a next generation FRB machine, namely Cosmic Antennae (CA), the aim of which is to increase the discovery rate by orders of magnitude over all current radio telescopes.

Presenter: LI, Di

Session Classification: Tuesday plenary session