

**Proposal Abstract:**

With a shared-risk project at the FAST (2019a-038-S), we discovered a new segment of the Outer Scutum-Centaurus (OSC) arm in our Galaxy. The OSC segment is located at around 15 kpc from the Galactic center, which is the most distant spiral arm in the Galaxy (Li et al. 2021, ApJL). Is there a spiral arm more distant than the OSC in the first quadrant? We proposed to take HI spectra toward positions in the sky region of  $30 < L < 90$  degrees,  $-5 < b < 10$  degrees (PT2022-0031). Among 84 positions, there are 27 positions have HI emissions with kinematic distances larger than the OSC. Most of the positions with large  $R_{gc}$  are located at high Galactic latitude of 5 to 10 degrees, which may be attributed to a new spiral arm at the extreme outer Galaxy. To further identify the possible new spiral arm, here we propose to make FAST new observations to search for HI emissions with similar kinematic distances, and to advance our understanding of the extreme outer Galaxy.