

**Proposal Abstract:**

We propose to extend our previous FAST mapping of the Stephan' s Quintet to approximately 0.5 Mpc to the west. Our previous FAST observation revealed a large diffuse HI emission to the south of SQ, with no clear optical counterparts (down to an r-band magnitude of  $\sim 25$  AB). Additionally, the HI emissions extended beyond the west edge of the previous observations (about 0.3 Mpc from the center of SQ), suggesting continuous emission on a larger scale, which might indicate the presence of a cold stream. The direction of the diffuse HI emission aligns well with the HI-bright galaxies detected by ALFALFA in the Pisces-Perseus supercluster, indicating a possible link with the cosmic web. To understand the origin of this diffuse feature and trace the cold gas on a larger scale, we propose a 21.6-hour FAST observation to detect the edge of the extended HI emission from SQ in the westward direction. This observation aims to obtain the HI flux and velocity map, identify the origin of the diffuse HI emission, and search for possible hints of a cold stream.