Proposal Abstract:

The H II region represent the one of key targets for investigating the structure and evolution of the Milky Way, and the diverse radio recombination lines (RRLs) emitted by H II offer a highly convenient method for detecting the chemical abundance and physical parameters of H II. In this proposal, we intend to utilize the the Five-hundred-meter Aperture Spherical radio Telescope to observe the hydrogen, helium, and carbon RRLs within the galactic longitude range of 45 to 180 degrees in the Perseus arm. This arm harbors a peculiar region characterized by low-level star formation activity. By analyzing the RRL intensity ratio of different elements and the electron temperature, we aim to elucidate the chemical and physical property differences within the Perseus arm. Indeed, studying the chemical and physical property differences within the Perseus arm can offer insights into the formation and evolution of the Milky Way.