JUPITER'S DECAMETRIC RADIATION OBSERVED BY JUNO AND EARTH-BASED RADIO OBSERVATORIES

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Jupiter's decametric (DAM) radiation emanates from polar source regions along auroral magnetic field lines with shell parameters L-shell ≈ 5.9 and/or ≥ 7, extending through the frequency range from a few to $\sim$40 MHz. The first simultaneous detection of Jovian DAM emissions was made by the Voyager spacecraft and ground-based radio telescopes in 1979, but, due to geometrical constraints and the limitation of the data obtained during the Voyager flyby of Jupiter, it has not led to a full understanding of the latitudinal beaming structures of Jovian DAM radiation, which are important to compare with the most accepted theory of the electron cyclotron maser instability. Since the first detection of Jovian DAM emissions in May, 2016, was made during Juno's interplanetary cruise prior to the Jupiter orbit insertion on July 5, 2016, a new opportunity to perform simultaneous observations of Jovian DAM radiation with Juno and Earth-based radio observatories has been provided. The radio and plasma wave instrument (Waves) onboard the Juno spacecraft, which is now successfully orbiting Jupiter, utilizes one electric dipole antenna and one magnetic search coil sensor. The Waves instrument is composed of three onboard receivers that record the electric fields from 50 Hz to $\sim$40 MHz and the magnetic fields from 50 Hz to 20 kHz. By analyzing the Waves data from Juno's approach and initial orbit of Jupiter, we show some results of the coordinated DAM observations with Juno and Earth-based radio observatories (Nançay Decameter Array in France, and Long Wavelength Array Station One in New Mexico, USA). Because of the unique polar trajectory, stereoscopic observations of Jovian DAM emissions with Juno and ground-based radio telescopes may lead to a better understanding of the latitudinal beaming structures from Jupiter's polar regions.