

THE INTERNET JUPITER RADIO OBSERVATORY AND MODULATION LANES OBSERVED BY THE NEW UFRO JOVE SPECTROGRAPH

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Abstract

The Internet Jupiter Radio Observatory (IJRO¹) was launched in November 2002. The IJRO is a joint project of the NASA Radio JOVE education program², the University of Florida, and the Kochi National College of Technology. IJRO provides real time data display of Jupiter's decametric radio emissions observed at the University of Florida Radio Observatory (UFRO) on the Internet. The data consist of plots of the intensities of three different observing frequencies (18.25, 20.1, and 22.2 MHz) with both right and left hand circularly polarized components and also a 20.1 MHz Radio JOVE channel. The main antennas are two arrays of conical log spiral elements. Each array has eight elements; one right-hand and the other left-hand circularly polarized. The strip chart displays 7 color-coded channels and is refreshed as fast as every three seconds. The audio output from the receiver's 20.1 MHz right-hand circularly-polarized component is streamed to the Internet.

The new spectrograph for Jupiter and Solar radio observations was installed in January 2004 and is part of an expansion of the resources offered by the Radio JOVE project. This Jove spectrograph has the unique capability of being accessible on the Internet continuously in real time. The spectrograph receiver has a pre-detection bandwidth of 30 kHz and steps through 200 channels in the range of 18 to 30 MHz at ten steps per second. Custom software running on a desktop computer controls the spectrograph. Free client software is available from the JOVE website for remote viewing of spectrograms over the Internet. Jupiter's decametric modulation lane events have been observed. Measurements of the slope of the modulation lanes (Modulation Lane Method) are providing a new precise form of remote sensing that allows the determination of the locations and beaming parameters of Jupiter's radio sources including Io-A, Non-Io-A, Io-B, Non-Io-B, Io-C, and Non-Io-C.

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¹ <http://jupiter.kochi-ct.jp/>

² <http://radiojove.gsfc.nasa.gov/>

