SOFTWARE DEFINED RADIO DEVELOPMENTS IN THE ARGENTINE INSTITUTE OF RADIOASTRONOMY FOR PULSAR AND TIMING MEASUREMENTS

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The Argentine Institute of Radioastronomy (IAR) is equipped with two single-dish radio telescopes capable of performing daily observations of pulsars in the south hemisphere. These radio telescopes were built in 1966 and 1980 respectively, and used mainly for the research of the hydrogen line and radio continuum at 21cm, these observations ended in the year 2001 and several scientific publication of great interest related with the mapping and radio continuum at 21cm where done. In the year 2017, a collaboration with the Rochester Institute of Technology started with one of the IAR antennas being refurbished to achieve high-quality timing observations, for it a new software defined radio back-end was developed based on the commercial Ettus SDR boards, thru the development of a custom pulsar receiver software for pulsar and timing measurements. After the successful measurement of several pulsars it was decided to upgrade the second antenna with a new receiver and an improved version of the digital backend. Also we will present the radio observatory and the technological developments that lead to improve our daily observations, focusing on the software development for the digital back end realized to the date among observations results that will be useful for pulsar science, such us the observations of the millisecond pulsar J0437-4715, and the future prospects to work with the CASPER Hardware.