

PRELIMINARY RESULTS OF RECENT CENTIMETRE WAVELENGTH
RADIO OBSERVATION OF MERCURY, VENUS,
MARS, JUPITER AND SATURN

by

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ABSTRACT

During the last thirty years systematic observations of solar system planets like Venus, Mars, Jupiter and Saturn have been undertaken in several wavelengths of the electromagnetic spectra, in particular in the radio range. The results obtained are of great importance for radio astronomers since these planets are used as primary calibrators for the radio telescopes. The radio emission from these planets at wavelengths smaller than 10 centimetres presents some fluctuations in the temperature whose origin are still uncertain. Lang (1981) have suggested that the brightness temperature of the inner planets and the Moon presents some fluctuations that are function of the phase angle of the planet. The results obtained for Venus by Janssen and Klein (1981) at the wavelength of 1.35 cm, does not show clear evidences for changes in the temperature of the planet associated with the phase. Their results were not conclusive at all and up to now no further observations of the inner planets were carried out trying to determine the real influence of the phase of the planet to their final temperature. During 1988, the positions of the planets Mercury, Venus and Mars become very favorable for radio observations - they will be relatively closer to the Earth in the preceedings years and also they will present large phase angle changes along the year. This exceptional orbital configuration inspired us to program an extensive series of planetary observations with the score of finding out or not any fluctuation in the measured temperature. This program utilized the 13.7m antenna of the Itapetinga Radio

Observatory (LAR). The observations were carried out at 1.35 cm and 0.7 cm. In this work we present the preliminary results of the observations of these planets and the clear evidences to associate the changes in the Venus brightness temperature with its phase.