

## **The 22 GHz Water MASER Line: A New Diagnostic Tool For Extrasolar Planet Search**

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The impact of 21 nuclei of Comet Shoemaker-Levy with the atmosphere of Jupiter in July 1994, permitted the detection of the 22 GHz water MASER line for the first time in the Solar System. This emission line was originated by a water cloud released from cometary ices after the explosion of the nuclei in the upper atmosphere (1). Our measurements have shown that under particular physical conditions, water MASER emission can be observed from planetary atmospheres. Thus water- (and probably other molecules like SiO) -MASER emission can be used as a powerful diagnostic tool for planetary search outside the Solar System ,as comets are able to deliver huge amounts of water in planetary atmospheres rising the probability of life development. We started therefore a search program with the 32 m dish of the Medicina Radiotelescope using a 132.000 multichannel spectrometer in order to cover the Doppler shifts due to planetary rotation. In this paper we'll present the most suitable candidates for such a search within 50 LY, the technique used and the preliminary results as the observations will require hundreds of hours spread over months or years.

(1) C. B. Cosmovici, S. Montebugnoli, A. Orfei, S. Pogrebenko and P. Colom, *Planet. Space Sci.*, **44**, 735, 1996.