

THE ASAAF-UCM PROJECT WITH PARTNER

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Abstract:

ASAAF-UCM (ASociación de Astrónomos AFicionados de la Universidad Complutense de Madrid), an amateur association with both graduate and undergraduate students of Physics, is involved in PARTNeR. As a result of this work and several runs of observation, we present measurements related to the flux variations of Sgr A* at cm-wavelengths. The global educational research project of ASAAF-UCM also includes the development of a GPL software to reduce and analyze the data.

1 Introduction

ASAAF-UCM (ASociación de Astrónomos AFicionados de la Universidad Complutense de Madrid) is an association of amateur astronomers located at the Physics School in Madrid, involving not only undergraduate students, but also PhD students and just lovers of Astronomy.

PARTNeR is a NASA and INTA's educative project arranged to approach students from secondary school and university to Radio Astronomy. PARTNeR allows different levels of involvement in the scientific process. In the case of ASAAF-UCM, this means the design of the scientific project, several runs of observation in remote mode, the development of tools to reduce and process the data, and the distribution of the results.

2 Observations and data reduction

The main scientific project of ASAAF-UCM with PARTNeR is the study of variability related to Sgr A*. We have chosen this source due to its broad flux variation during short periods of time as well as to its great intensity. PARTNeR uses fulltime the DSS-61 (Madrid 34-meter antenna at MDSCC), which operates simultaneously at X and S bands (8.4 & 2.3 GHz); the resolution of the pencil beam is 3.6 and 12 arcmin respectively. The data were collected, always via remote control, during two runs splitted into 2-3 hours sessions every 15 days, on January-March, 2004 and January-March, 2005.

As for the processing of the data, we have developed several tools -available on MATLAB at this stage-. This program unfolds the various files corresponding to an observation -antenna's position recordings, control files, measured flux recordings, etc- and interprets them and correlates them in order to apply standard corrections and calibrations to the data [2].

3 Results and conclusions

Sgr A* is an extended radio source with different sub-structures, that can be recognized in the obtained scans. Sgr A East contributes to the flux with a low plateau at the tail of the curve. SGR A West is the brightest, but not resolved, source. Sgr A* is immersed in Sgr A West and is the only proved variable source within, so the flux variations can be assumed as variations of Sgr A*.

By means of comparison between the fluxes of Sgr A East -stable enough in matters of the used scale of flux- and Sgr West, we have been able to endorse the detection of Sgr A*'s variability [3]; see also the reported measurements of variability of Sgr A* at centimeter wavelengths by [1] although the issue is still under discussion.

Acknowledgements: The work of many of ASAAF-UCM members during the observations is gratefully acknowledged. R. Arroyo and B. Arroyo have worked in the reduction software. Thanks to J. Zamorano and J. Gallego for their constant help. ASAAF-UCM thanks the support of the Complutense University of Madrid and PARTNeR staff for their help.

References

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