

Technical Page

Proposal Type: Regular
 General Category: Pulsars
 Observation Category: Galactic
 Total Time Requested: 13.5 Hours

Proposal Title: High frequency search for pulsation from the Soft X-ray transient Aql X-1 in quiescence

ABSTRACT:

We plan to search coherent radio emission from the neutron star in the soft X-ray transient Aql X-1 during its quiescent state. Observational evidence like the presence of a hard X-ray energy tail or a non-disk like optical Doppler tomography, as well as theoretical evolutionary considerations, suggest the presence of an active millisecond radio pulsar in these systems (with a spin frequency of 549 Hz, as inferred from coherent pulsations during X-ray type I bursts). Previous investigations carried out at Parkes gave negative results, but were carried out at low frequencies, for which absorption can strongly hamper the detection. The large collecting area of the Arecibo radiotelescope, combined with the large bandwidth offered by the use of 4 WAPPs, provides the opportunity of searching radiopulses at high frequencies (5, 6 and 8 GHz, at which we get rid of the free-free absorption), while preserving enough sensitivity (>20 better than the 70-m radiotelescope class) for counterbalancing the expected spectral decline of the source.

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Service Observing Request

- None
- All of the observing run.
- Part of the observing run.
- Queue Observing

Remote Observing Request

- No
- Maybe
- Yes

Instrument Setup

C X-high

Atmospheric Observation Instruments:

Special Equipment or setup: We will use 4 WAPP for a total band of 400 MHz.

RFI Considerations

Frequency Ranges Planned

4800-5200

5600-6000

8000-8400