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Interstellar medium studies below 200 MHz: LOFAR single stations and NenuFAR

Jean-Mathias Grießmeier[1,2], Louis Bondonneau[1], Maciej Serylak[3,2] and Gilles Theureau[1,2,4]

[1]LPC2E - Université d'Orléans/CNRS, 45071 Orléans cedex 2, France
email: jean-mathias.griessmeier@cnrs-orleans.fr

[2]Station de Radioastronomie de Nançay, Observatoire de Paris, PSL Research University, CNRS, Univ. Orléans, OSUC, 18330 Nançay, France

[3]SKA SA, Cape Town, South Africa

[4]Laboratoire Univers et Théories LUTh, Observatoire de Paris, CNRS/INSU, Université Paris Diderot, 5 place Jules Janssen, 92190 Meudon, France

Abstract. International LOFAR stations, equipped with powerful backends, can be used as individual telescopes, and provide data sets complementary to those obtained with the LOFAR Core. Such "local mode" observations are particularly adapted to monitoring observations, where the advantage of having a high observing cadence (one observation per week) outweighs the reduced sensitivity of a single station when compared to the full array. With such observations, it is possible to monitor the temporal evolution of the pulsars' behaviour via its dispersion, scattering, intensity, and profile shape. We present recent studies performed in the LOFAR low band (10-90 MHz).

Keywords. (stars:) pulsars: general, ISM: general

1. Introduction

International LOFAR stations are not included in all observations of the International LOFAR Telescope (ILT). When this is the case ($\sim$ 40% of the time), the international LOFAR stations are operated as separate, standalone facilities. This "single station" mode is particularly adapted for repeated observations of moderately strong sources, such as monitoring of bright pulsars.

The LOFAR station at Nançay, France (FR606) participates in a programme pulsar monitoring in the LOFAR HBA band (110-190 MHz, see Bondonneau *et al.* 2017). The long-term monitoring can be used, among other things, to detect tiny variations in pulsar profiles (e.g. Michilli *et al.* 2017).

We have recently started an equivalent program in the LBA band (25-90 MHz). Prior to the start of the monitoring campaign, we performed a systematic survey of known pulsars. With observations of $\leqslant$ 5h, we were able to detect 50 pulsars (see Figure 1).

2. Conclusions

The survey of known pulsars has allowed to select the strongest sources for regular monitoring; these sources are now observed with a cadence of one observation per week.

References

Bondonneau, L., *et al.* 2017, *IAUS*, 337, submitted (this volume)
Michilli, D., *et al.* 2017, *MNRAS*, submitted

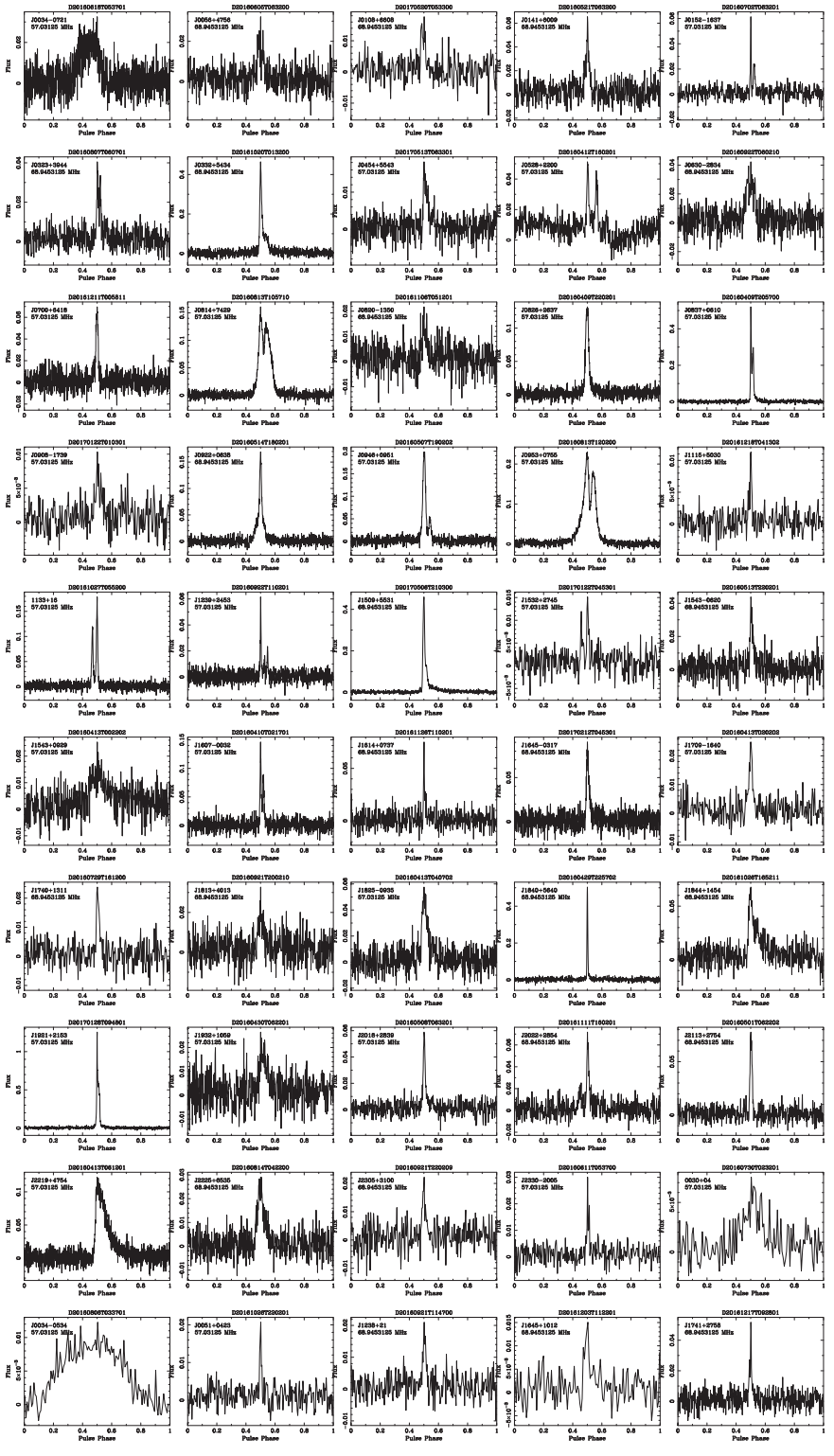

Figure 1. 50 pulsars detected with FR606 in the LOFAR LBA band (25-90 MHz).

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