• **WP 2.3** AAVP : EMBRACE, analog beamforming (70 p.m.)
• **WP 2.1.6** EMC compatibility (RFI mitigation), co-leader with ASTRON (16 p.m.- thesis), UORL (6 p.m.)
• **WP2.5.3** DSP ; non-imaging processor (pulsars); OBSPAR 16p.m., UORL 6 p.m.

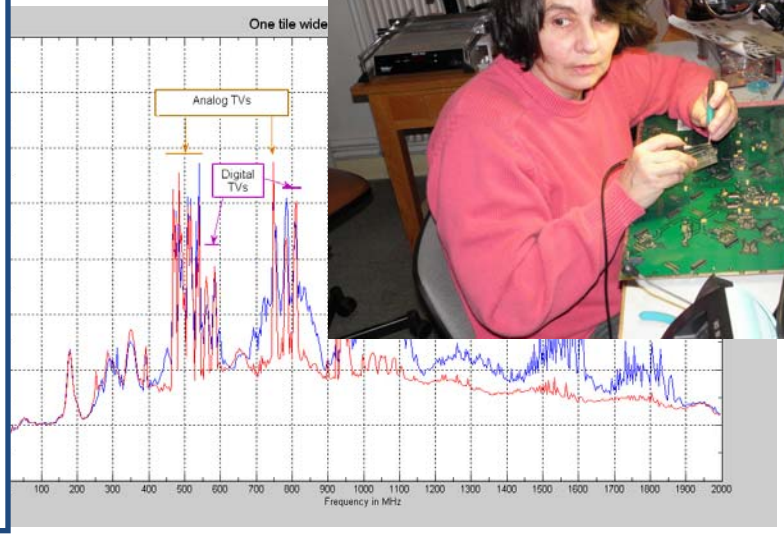
• EMBRACE
  - 18 tiles integrated
  - 4 tiles fully operational
  - Beam profile using GPS satellites
  - Monitoring and Control
  - Science Data Model for data acq.
• RFI
  - Tests on simulated data, and real data from LOFAR
  - Real-time RFI removal for pulsar

Steve Torchinsky
Nançay Radio Astronomy Facility
Observatoire de Paris

D. Ait-Allal, S. Barth, S. Bosse, I. Cognard, P. Cottet, L. Denis, R. Feliachi, G. Kenfack, J.-M. Martin, W. Paule, P. Picard, J. Pezzani, S. Pomarède, P. Renaud, B. da Silva, C. Taffoureau, G. Theureau, I. Thomas, F. Viallefond, C. Viou, R. Weber

EMBRACE@Nançay

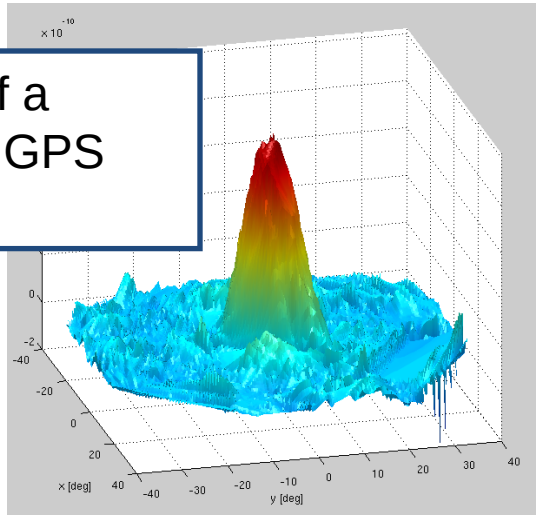
- intermodulation due to digital TV at ~820MHz
- 18 boards modified with high pass filter
- 18 tiles setup at Nançay
- 4 tiles fully integrated, waiting for CDC cards
- quality control for manufacture of large numbers of components is a serious concern



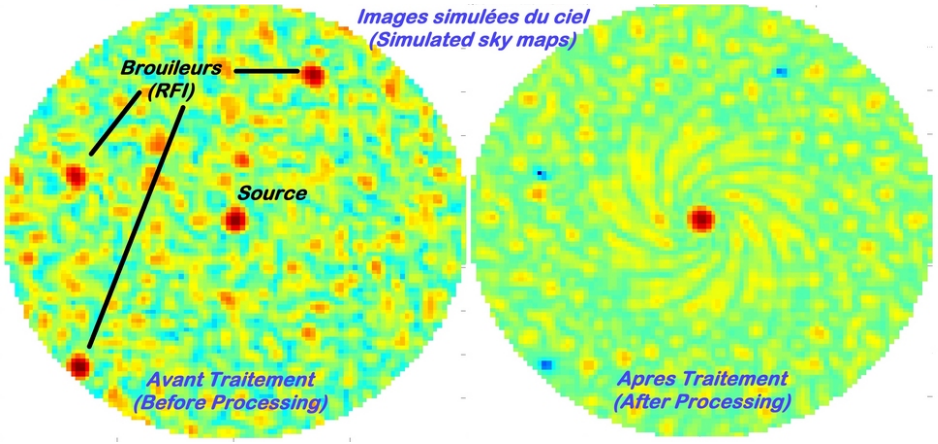
EMBRACE
Science Data Model

- F. Viallefond et al
- based on SDM for ALMA and EVLA

- beam profile of a single tile using GPS (Olofsson et al)



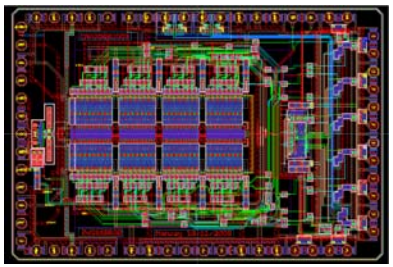
RFI Mitigation



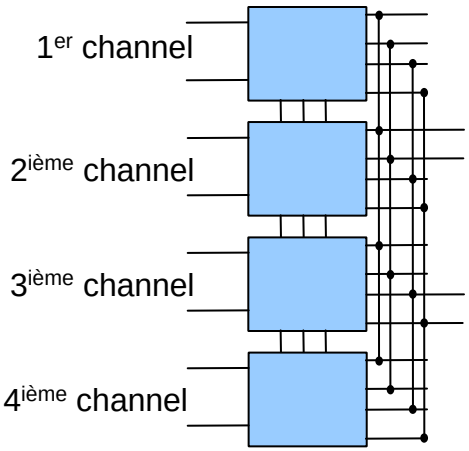
- Spatial filtering by using a cyclostationary approach (R. Feliachi, thesis)

Fast Flash ADC

- Fast ADC @ 3GS/s (B. da Silva, thesis)
- 1.5GHz bandwidth, ENOB ~5
- 0.25 µm SiGeC NXP Caen
- Sent for fab. Nov 2009
- will test in April 2010



Phaseshifter AAVP



- Phaseshifting 360° 4 bits (22.5°)
- 0.25µm, SiGeC, QUBIC4X, NXP Caen
- 1.1 x 1.2 mm^2, including saw lines

Focal Array for Nançay

Focal Plane phased-array for Nançay,
J. Pezzani et al

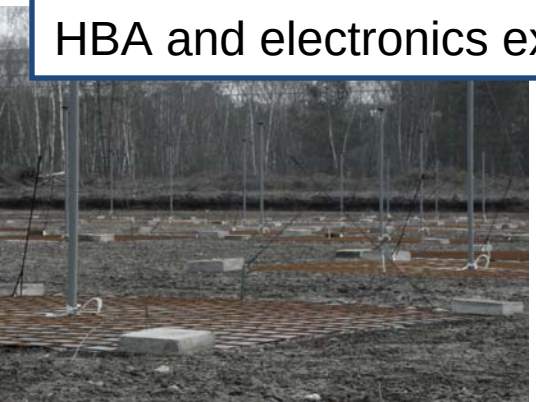
192 elements, (EMBRACE vivaldis)
hybrid analog/digital beam forming

LNA + beamforming at Nançay

Data acquisition/real-time processing for BAO by LAL/CEA Saclay (Ansari & Yeche et al)

LOFAR@Nançay

96 LBA installed
HBA and electronics expected April/May



LOFAR Super Station
96 mini-arrays in tied-array mode = 10x sensitivity
hierarchical beamforming
LNA + integrated analog beamforming at Nançay
3 yr study funded for 3 mini-array prototype

Station de Radioastronomie de Nançay

New management

beginning April 2010

Gilles Theureau
director
Station de radioastronomie de Nançay