SKA-France

SKA-France HPC Meeting #2
September 9, 2016

Chiara Ferrari
Astronomer at Observatoire de la Côte d'Azur
SKA France Coordinator

Results of the Signal Processing meeting of Sept. 8, 2016

Results of the Signal Processing meeting of Sept. 8, 2016

- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**

Results of the Signal Processing meeting of Sept. 8, 2016

- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**
- Main **research fields**:
  - Imaging from interferometric data: calibration and deconvolution
  - Blind source separation
  - Optimised detection of transient sources
  - Spectrometers: post-processing, RFI excision

Results of the Signal Processing meeting of Sept. 8, 2016

- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**
- Main **research fields**:
  - Imaging from interferometric data: calibration and deconvolution
  - Blind source separation
  - Optimised detection of transient sources
  - Spectrometers: post-processing, RFI excision
- Existing applications to **real data**: LOFAR, Planck, WIBAR@NRT

Results of the Signal Processing meeting of Sept. 8, 2016

- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**
- Main **research fields**:
  - Imaging from interferometric data: calibration and deconvolution
  - Blind source separation
  - Optimised detection of transient sources
  - Spectrometers: post-processing, RFI excision
- Existing applications to **real data**: LOFAR, Planck, WIBAR@NRT
- Participants deeply interested to **build a joint project to test existing algorithms** on more powerful machines and to optimise them (e.g. parallelisation) in collaboration with interested industrial partners

Results of the Signal Processing meeting of Sept. 8, 2016

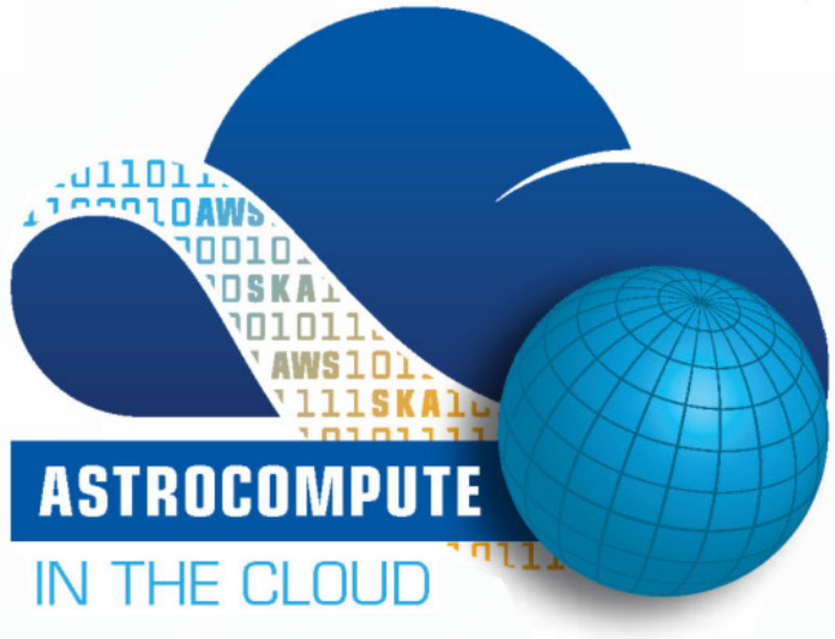
- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**
- Main **research fields**:
  - Imaging from interferometric data: calibration and deconvolution
  - Blind source separation
  - Optimised detection of transient sources
  - Spectrometers: post-processing, RFI excision
- Existing applications to **real data**: LOFAR, Planck, WIBAR@NRT
- Participants deeply interested to **build a joint project to test existing algorithms** on more powerful machines and to optimise them (e.g. parallelisation) in collaboration with interested industrial partners

Some examples

- Post-processing of spectrometric data:
  - Minimum configuration: *48 cœurs sur 2 processeurs Intel Xeon, 1,5To de memoire, 24To de disques durs*
  - Configuration under study for a future grant application: *machine équipée de 256 cœurs Xeon Phi (coprocesseurs vectoriels) avec 6 à 9To de mémoire et 200To de disques*
- New deconvolution algorithms tested on Amazon Web Service (in collaboration with SKAO)
- More examples can be provided by participants in the room

Astrocompute in the Cloud Program

- AWS is adding 1PB of SKA pre-cursor data to the Amazon Public Data Sets program
- We are also providing $500K in AWS Research Grants for the SKA to direct towards projects focused on:
  - High-throughput data analysis
  - Image analysis algorithms
  - Data mining discoveries (i.e. ML, CV and data compression)
  - Exascale data management techniques
  - Collaborative research enablement



https://www.skatelescope.org/ska-aws-astrocompute-call-for-proposals/

amazon web services

Results of the Signal Processing meeting of Sept. 8, 2016

- About 25 participants: small but **very active community in France**, developing **state of the art algorithms** for processing radio data and actively collaborating with **international SKA partners**
- Main **research fields**:
  - Imaging from interferometric data: calibration and deconvolution
  - Blind source separation
  - Optimised detection of transient sources
  - Spectrometers: post-processing, RFI excision
- Existing applications to **real data**: LOFAR, Planck, WIBAR@NRT
- Participants deeply interested to **build a joint project to test existing algorithms** on more powerful machines and to optimise them (e.g. parallelisation) in collaboration with interested industrial partners
- **Build a French solution to be presented to SKAO and to the SDP consortium by mid-2017.** Start with the most urgent and basic algorithms