

# BAORadio

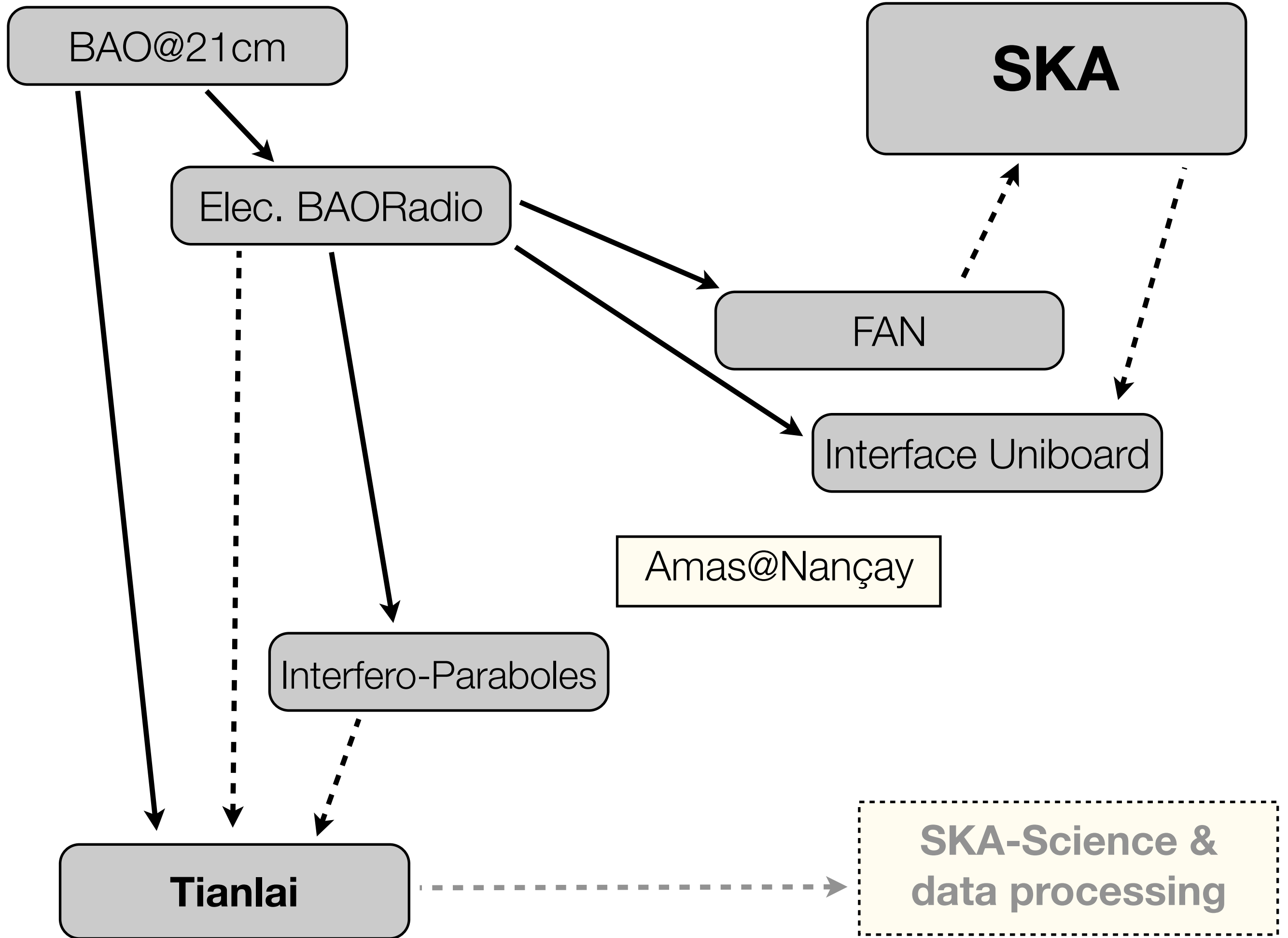
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Orsay - 29 Mars 2012

# BAO @ 21 cm : Énergie Noire

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- Intensity mapping
- Développement d'électronique / Système d'acquisition (BAORadio)
- FAN : Prototype FPA (R&D technique / SKA )
- Programme Amas @ Nançay
- Interface électronique BAO → Uniboard / ethernet
- Interféromètre de test avec des paraboles
- Projet Tianlai (NAOC/Chine, France, USA, Canada ...)



# Objectifs scientifiques

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- Grandes structures , distribution du gaz HI
- BAO / Énergie noire
- Caractérisation spectrale des avant-plans / radio-sources
- Dynamique et évolution des galaxies / amas - HI dans les objets proches

- ❖ **2012 : simulation work, design work (mechanical/ feed/) on dish & cylinders (0)**
  - ❖ follow-on work @ CMU (cylinders - summer 2012)
  - ❖ work on dishes at Nançay (spring, summer 2012)
  - ❖ End spring 2012 : formal collaboration/MOU
  - ❖ fall 2012 : select dish or cylinders
  
- ❖ **2013/2014 : construct the engineering array & deploy on site (1 / A)**
  - ❖ 16 antenna x 2 polar -->  $\geq 32$  feeds,  $\geq 100$  MHz bandwidth
  
- ❖ **2014/2015 : upgrade the array to  $\sim 256$  feeds ,  $\geq 200$  MHz bandwidth (2 / B)**
  
- ❖



- ❖ Stage 0 : tests with cylinders, dishes, feed design, electronic development ...
- ❖ Stage 1 (2013-2014) : Engineering array, 32-48 feeds - 250-400 k\$
  - ❖ Aim : detect optical  $\times$  21cm cross correlation at  $z \sim 0.3-0.5$
- ❖ Stage 2 (2014-?): First science array, 256 feeds - 2 M\$
  - ❖ Aim: detect BAO with 21 cm signal at  $z \sim 0.7 - 1.0$
- ❖ Stage 3 (2018 ?) : DE survey,  $\geq 1000$  feeds - 10 M\$
  - ❖ Aim: measure BAO with 21 cm signal in the redshift range 0.5...2.0