# Tianlai Observation Strategy and Science reach paper

**First discussed in April 2016 - Updated July 2016**

- A scientific paper prepared and signed by the Tianlai collaboration
- A brief technical presentation of the instrument, electronic and the correlator
- Present and discuss the observation strategy for the Tianlai pathfinder : polar cap with the dish array, and the different dish array layouts as suggested by Albert - Observation goals for the cylinder array.
- Discuss the sensitivity level for these configurations - and if possible, discuss also the foreground contamination for the different configurations.
- Science goals for the pathfinder arrays and surveys: sensitivity estimates to detect the correlation between radio (21 cm) and other (optical ?) surveys …

# Possible Scientific Paper I

- Polar Cap survey and dish array layouts
- Comparison of array performance for different 16-dish array layout for observing around the polar cap (see Albert's array layouts)
- Compute simulated signal + foregrounds 3D maps around the polar cap - Apply some foreground separation method - check the extracted 21-cm signal compared  to the original signal
- Discuss the data sets that could be used for calibration (radio sources near the pole) and if applicable, discuss the optical surveys that could be used for 21 cm detection in cross correlation
- Discuss the science reach for larger dish arrays (up to 50-64 dishes)

# Tianlai white paper or commissioning results ?

- Should we gather all the information concerning the Tianlai project as ***White Paper*** that we put on arXiv ?
- Describe in full detail the current configurations of two arrays
- Describe the mechanical design, the feed design and responses
- Describe the electronic and correlator design and operation
- Describe the calibration system
- Include some results from the commissioning data / observations
- Discuss the science goals and programs for Tianlai, and future plans