Antenna Working Group

Outline of Design Report for Tianlai Meeting 15-19 July, 2013
Telecon Agenda 24 June 2013

Dish Antennas
- baseline is on-axis, 6 meter diameter
- mechanical design - 2- axis mount (alt-az mount?) designed by **Prof. Shi**.
  - can we post a design on the website?
- current construction plans:
  build 16 on-axis dishes (Institute 54 and Institute 23 may build them)
  order this month. plan to have on site next year.
- simulated beam patterns vs frequency
  Tao Liu has already done this using CST software – see slides from 10 June
  Chris Anderson is working on this at UW using Microwave Studios CST
- default feed is four-square

Cylinder Antennas
- on-axis vs off-axis
- mechanical design for each case - **Zhipeng Chen**
- current construction plans?
- simulated beam patterns/sidelobes vs frequency in both on and off-axis cases
  Tao Liu is working on this for on-axis case – see slides from 10 June
  Chris Anderson is also working on this
- default feed is four-square (MOST and CHIME use 4-square)
- we should consider orienting feed axis at 45 degrees to cylinder axis for symmetry
- we should consider feed x-talk and spacing.
- do we combine in groups of 4?

Feeds
-default design is 4-square - see slides from 24 June from Jeff
-simulated 4-square beam patterns
  - Tao Liu has done this – see slides for 24 June
  - can Tao post CST files for UW to use? We need details of balun design, etc.
  - **Chris Anderson** and Aleks Cianciara are working on this at UW
- measured 4-square beam patterns
  - has this been done?
  - UW group plans to do this
- simulated impedance/ matching to LNA
  - **Tao Liu** has done this – see slides for 24 June
  - **Chris Anderson** plans to do this
- are there other feeds we should consider for either dishes or cylinders?
  - solar radio group is using a wideband feed from Sweden (like ATA feed?)

LNAs

- Institute 54 has built and tested 4 amplifiers. See slides from Jeff 24 June
- these are being modified by Institute 54 now to work in our desired frequency range
- what is current design in China? Need to post the designs on the NAOC website if possible - **Yougang Wang and Fengquan Wu?**
- has LNA been tested? Need to post gain, S parameters on NAOC website. **Yougang Wang and Fengquan Wu?**
- LNA has been integrated with 4-square feed. Has T_receiver been measured?

Signal Transport to Correlator

- TV cable tests of phase vs temperature and bending has been performed at NAOC (**Yougang Wang and Fengquan Wu**)
- RF cable tests?
- RF over fiber tests?