

First VLBI2010 Working Meeting —Format and Agenda (Draft)—

Location: MIT Haystack Observatory
Date: September 15, 2006

1. Keynote

The most urgent issue facing the V2C is the definition of specs for the VLBI2010 antenna. This is needed to support current proposals for new geodetic VLBI antennas in Australia, Korea, Germany, and possibly elsewhere. There is risk involved in the process because the favored method for determining the delay observable, the "S-Ku broadband delay" approach, has never been tested. Although plans exist to test it, results are not anticipated for at least a year. The focus of this meeting will be to study the "S-Ku broadband delay" approach theoretically to see whether or not enough confidence exists to use it as a basis for determining the VLBI2010 antenna specifications.

Briefly, the "S-Ku broadband delay" approach involves the use of a large number of IF bands to unambiguously determine the rf phase. It requires the use of a broadband feed such as the Kildal feed, and opens up the possibility of determining the very precise phase delay even at modest SNR's. Complicating factors which need to be studied include the effect of source structure, non-linearity and instability of the feeds/electronics/ cables, RFI, and possibly others.

Although other topics relating to improvement of VLBI results will be considered for this meeting, they will only be included if time permits.

2. Format

The format of the meeting will be similar to that of the East Coast VLBI Meeting that many of you attended last year. A number of short informal presentations will be made. These are not intended to be polished final reports, but simply work in progress. They will be used as a stimulus for discussion. The presenter will then moderate discussion on that topic.

The time for each presentation and discussion will be flexible so that the depth of treatment can reflect interest and perhaps the diversity of views. Prior to the meeting it is expected that written summaries of the work to be presented will be distributed so that attendees can be better prepared with questions, comments and ideas for the following discussion.

3. Suggested Presentations

- I. Is 4 ps delay precision really required? (Dan, Johannes, Joerg, Arthur)
- II. Electronics
 - a. Broadband (e.g. Kildal) feeds and related issues (Brian)
 - b. Polarization issues (Brian)
 - c. Temporal stability of DBBC's (Gino, Alan Rogers, Alan Whitney)
 - d. Linearity and stability of electronics/cables (Brian, Alan Rogers)
 - e. Calibration issues for broadband delay (Brian, Alan Rogers)
 - f. absolute pcal (Tom Clark)
 - g. will Moore's Law with respect to data sampling/recording/transmission continue to hold into the future (Alan Whitney, Koyama-san)
- III. RFI
 - a. How bad is it? (Gino, Tom Clark)
 - b. RFI reduction approaches (Gino, Bill)
- IV. Source structure
 - a. How bad is it w.r.t. "broadband delay" (Patrick Charlot)
 - b. UV coverage of new high density schedules (Toni Searle)
 - c. Source structure correction, useful or not? (Patrick Charlot)
 - d. Effect of selected source structure examples on "broadband delay" determination (Bill, Arthur)
- V. SNR requirements (Bill)
- VI. Troposphere and WVR prospects (Arthur, Alan Rogers)
- VII. The case for or against Multiple antennas (Bill)
- VIII. Do we know enough to specify the VLBI2010 antenna? (all)
- IX. Is 1 mm baseline precision possible? (Dan, Johannes, Joerg, Arthur)
- X. Other
 - a. Status of EVN2010 Upgrade (Mike Garrett)