

VLB ARRAY MEMO No. 493

To: Bill Horne

From: B. Clark

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Subj: Cable Wrap centering for the VLBA.

There is apparently no virtue in having all antennas of the array at similar points of the cable wrap. Therefore, longitude of the antenna is not a factor in deciding where the center of cable wrap should be. Note also that for probably more than a third of the time we shall be observing objects that pass north of the zenith at St. Croix and south of the Zenith at Oroville.

Minimum use of the cable wraps by long tracks is given by setting the azimuth of the wrap center at the place given by $\cos(Az) = -\tan(\text{lat})$. (I believe this is the exact form of the approximate relation you occasionally quote). This ranges from 109 degrees for St. Croix to 180 degrees at Oroville.

I don't believe the above is a very important criterion, either, although it does dictate the quadrant in which the wrap zero should be set. More important is that, when switching back and forth between two objects which pass near the zenith, one should rarely have to rotate more than 180 degrees. I think this can be ensured if the cable wrap zero is near 180 degrees azimuth, and care is taken to start out on the proper wrap when the source pair is first acquired. (The problem appears to be symmetric in the meridian).

There is also a certain convenience in having a simple, easily remembered number for the cable wrap zero.

I therefore recommend that the cable wrap zero for all antennas be set due south, at 180 degrees azimuth.