CHINESE VLBI NETWORK PROJECT

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1. Introduction

The Chinese VLBI Network (CVN) project was proposed early in 1979, and since then VLBI research has been actively developed in Shanghai Observatory. However, only recently the whole project was accepted by the Astronomy Committee, Division of Mathematics and Physics, Academia Sinica.

2. The Sites

The selected sites of the network are Shanghai, Kunming and Urumqi. In addition, there are other two stations for radio astronomy. In Miyun near Beijing there is an aperture synthesis radio telescope with an equivalent diameter of 42-m in the meter waveband. And in Delingha in the west of China, a 13.7-m antenna in the millimeter waveband has been erected already. These two stations will also be involved in VLBI observation in the future.

3. Scientific Objectives

The Project is aimed at both geodynamics and astronomy applications. It is considered that the Chinese VLBI network will run in two modes of operation, i.e., domestic and international collaboration.

(i) Domestic mode

Three or four antennas can be used for VLBI survey to map large samples of the radio sources. Measurements of source positions and maser source study can also be made in this mode of operation. Also of interest are the determinations of Earth Rotation parameters (ERP) and the deformation of the crust on the territory, which is related to earthquake study and Earth science.
The Shanghai-Miyun-Urumqi-Kunming forms a meter waveband VLBI array.

M. J. Reid and J. M. Moran (eds.), The Impact of VLBI on Astrophysics and Geophysics, 475–476.

In this mode of operation, we can operate the network on our own initiative and lay down the groundwork for international collaboration.

(ii) International collaboration

The combination of the CVN with the EVN and Japanese radio telescopes would produce excellent image quality particularly on the northern sources. In the Asia-Pacific region, the Chinese VLBI network would play an important role. The Chinese meter waveband VLBI array can be largely extended with Australian antennas and the powerful Ooty radio telescope, India.
The CVN will make positive contributions to the investigation of global crustal motions and ERP, and the establishment of the terrestrial reference frame and its maintenance using VLBI. The Shanghai radio telescope will join regular observations in the IERS (International Earth Rotation Service) for the determination of ERP in early 1988. And Shanghai Observatory will become one of the VLBI data analysis centers in IERS project.

4. Major Facilities

Table 1 below lists the radio telescopes in China. Receivers, narrow-band terminals and hydrogen masers will be constructed in China. The CVN center is being set up in Shanghai. Investigation is being made for the construction of a wide-band processor for the CVN. The first station of CVN, Shanghai station, will conduct its first VLBI experiment in June, 1987. The completion of the whole project is scheduled for 1992.

Table 1 Chinese VLBI Network Project

Observatory	Antenna Diameter (m)	Wavelength (cm)	Terminal	Frequency Standard	Remarks
Shanghai	25	92,50,21,18, 13,6,3.6,2.8,1.3	Mk-2, Mk-3	H maser	completed
Urumqi	25	92,50,21,18, 13,6,3.6,2.8,1.3	Mk-2, Mk-3 or VLBA	H maser	planned
Yunnan	10	92,50,21,18, 13,6,3.6,2.8	Mk-2, Mk-3 or VLBA	H maser	antenna available
Miyun	42(equiv.diam.)	92	Mk-2	Rb	id.
Delingha	13.7	1.3	(future plan)		id.

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