

CHINESE DUAL FREQUENCY WATER VAPOR RADIOMETER FOR VLBI

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A Chinese VLBI Network Project is under construction in China. The first 25-m antenna and associated VLBI system have just been completed at the She-Shan Station of the Shanghai Observatory. Both geodetic and astrophysical VLBI programs will be undertaken with the Network. A dual frequency water vapor radiometer is being developed to determine the tropospheric path delay correction. This WVR has the following characteristics:

Operating frequencies	20.60 and 31.65 GHz
IF bandwidth	50–500 MHz
Noise figure	≤ 6 dB
Integration time	Software selectable in steps of 1 sec
Antenna configuration	Two mechanically coupled elevation steerable 90 offset paraboloid mounted on an azimuth pedestal
Antenna beamwidth	2.4 deg
Beam efficiency	90% for ± 5 deg around beam center
Pointing accuracy	0.5 deg azimuth; 0.1 deg elevation
Control & data acquisition	Microcomputer IBM PC/XT
Calibration	Waveguide load at 313 K, noise diode, tipping curves
Reference stability	Waveguide load 0.05 K/hour, diode 0.2%/week
Antenna temperature accuracy	0.5–1.0 K