

Development of the Giga-bit Real-Time VLBI using the Super-SINET(3)

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<http://www.cive.gifu-u.ac.jp/lab/eb2/index.html>

'Super-SINET' is the most high-speed optical linked network for scientific experiments in Japan, which is operated by the National Institute for Informatics (NII). Real-Time VLBI (e-VLBI) is one the project in Space Science Region and National Astronomy Observatory (NAO) is promoting to connect radio telescopes in Japan.

Gifu University has an 11-m radio telescope and it was connected to the Super-Sinet last October, and started e-VLBI experiment with Tsukuba 32-m telescope of Geographical Survey Institute (GSI).

After the test of the optical network link, we had installed optical transceiver and correlator for VLBI developed by NAO, and Giga-bit VLBI sampler developed by Communications Research Laboratory (CRL). At 23rd November, we could find first 2.4Gbps e-VLBI fringes between Gifu 11-m and Tsukuba 32-m telescopes.

Geodesy VLBI needs S and X bands simultaneous observations because of the ionospheric delay corrections. If we use the uplink and downlink function of the optical fiber network and process S and X band data in different two places, we could get S/X fringes simultaneously. This way is the new technique in VLBI, so we had developed it, and succeeded to obtain S/X bands fringes at February 2004 for domestic geodesy VLBI JD0402 session. This experiment used 4Gbps data transfer, and is the record in domestic e-VLBI.

The connection of the Gifu University to the Super Sinet uses 'Gifu Information Super Highway' operated by Gifu Prefecture, we are thankful to the owner of the network.