

The First dual frequency VLBI observation using VERA - Experiment 1

2. phase delay solutions at 22GHz & 43GHz

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We report our first ever simultaneous dual frequency VLBI experiment using VERA. The purpose of this Korean-Japanese joint experiment is to examine the feasibility of the simultaneous multi-frequency phase referencing technique, an atmospheric phase delay correction method, which is suggested for KVN system. This method is based on the idea that the differential atmospheric phase delay is mainly caused by the differential water-vapor-induced excess path length in the troposphere. The technique takes advantage of the non-dispersive nature of the water-vapor-induced phase delay. Our VERA experiment was conducted on 15th April 2005 between 14:15 and 21:30 (UT). At 22GHz (Beam A), NRAO512 was scheduled, and at 43GHz (Beam B), a bright quasar 3C345, which is only 0.5 degree apart from NRAO512, was observed. 128MHz broadband continuum observation mode was taken and single LL circular polarization mode was used. Different from the previous multi-frequency phase referencing technique, we recorded signals from two quasars without apparent time delay. This simultaneous observation ensures that the phase delay solution interval problem, which could be severe in the previous one, does not exist in our case. In this talk, we will present our preliminary multi-frequency phase delay correction results based on the non-dispersive phase delay model. Short discussions about the instrumental calibration effects, the possible ionospheric effect, and future plans will be given.