Current status of Korea VLBI system for Geodesy (KVG)

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A permanent geodetic VLBI station with a 22-m diameter antenna will be newly constructed in Korea by the National Geographic Information Institute, Korea (NGII) for the project named Korea VLBI system for Geodesy (KVG). The purpose of KVG project is not only to maintain the Korean Geodetic Datum accurately on the International Terrestrial Reference Frame (ITRF), but also to be a fundamental station in East Asia contributing to the better determination of the ITRF there.

A plan of the KVG project was initiated in 2001 by the NGII, and a grand design for KVG project realizing NGII's plan was proposed by the Ajou University in 2007 under the collaborations with the National Institute of Information and Communications Technology, Japan (NICT), National Astronomical Observatory, Japan (NAO), and the Geographical Survey Institute, Japan (GSI). The project has got a Korean national budget for construction formally, and it has entered the three-year term of construction and development phase since October, 2008. A new geodetic VLBI station will be constructed in Sejong city (about 120km south from Seoul and about 20 km north-northwest from Daejeon), and it will be a component of the International VLBI Service for Geodesy and Astrometry (IVS) as a central facility dedicated to geodetic VLBI in Korea after the construction of all system is completed in 2011.

On the other hand, the Korea Astronomy and Space Science Institute (KASI) has already promoted Korean VLBI Network (KVN) project dedicated to radio astronomy since 2001, and three 21-m diameter antennas have already been constructed at Seoul, Ulsan, and Jeju Island. Although their receivers have not yet been fully installed, the antenna is designed to be able to receive 22, 43, 86, and 129 GHz bands simultaneously. The KVG antenna is designed to be able to receive 2, 8, 22, and 43 GHz bands simultaneously in order to carry out geodetic VLBI observations not only with current geodetic VLBI stations equipped with 2/8 GHz receivers but also with KVN stations that will be equipped with 22/43 GHz receivers in future. This is an outstanding feature of the KVG system distinguished from other geodetic VLBI stations. The design of KVG antenna follows the VLBI2010 except for receiving frequencies and the diameter; VLBI2010 is the guideline for next generation's geodetic VLBI system compiled by the IVS. According to VLBI2010's suggestion, the antenna is also designed to be able to introduce a broadband feed and receivers in the future.