Effelsberg Station Report

In 2011 a new wide-band receiver for low frequencies was installed in the prime focus at Effelsberg. It covers the range from 300 to 900 MHz and provides dual circular polarization. The 92cm (327 MHz) band has already been tested successfully in EVN Session II (2011) and with the Russian RadioAstron satellite (see below). Since the receiver provides the full 300–900 MHz range, simultaneous 50/92cm observations should be possible.

The digital DBBC backend is now the standard terminal for all EVN, e–EVN, global and geodetic VLBI observations. It has now been used for four EVN Sessions. Since NRAOs SCHED does not support the DDC mode of the DBBC yet, JIVE staff provide PIs with SCHED setup files adapted to the requirements of the DBBC for EVN sessions. Also the Field System does not support the DBBC yet, but some station code was implemented at Effelsberg to allow the integration of the DBBC commands and use of NRAO–like continuous Tsys calibration at 80 Hz.

In cooperation with JIVE/NEXPRESS Effelsberg is now equipped with the hardware to do 4 Gbps VLBI and e-VLBI using a Mark5C disk recorder and in parallel the Harrobox, that is connected to a 10GE switch to send the data directly to JIVE. The Harrobox is a fast PC with two 10 GE interfaces to receive and send 4 Gbps eVLBI data streams. The incoming 4 Gbps data stream is coming from a Fila10GSA connected to both VSI ports of the DBBC. A successful test of the equipment was done on June 20, showing that all hardware is working and that Effelsberg can indeed send 4 Gbps to JIVE. Unfortunately, no fringes have been found between the participating stations Onsala, Yebes and Effelsberg.

The NRAO RDBE VLBI backend and a Mark5C recorder have been installed and successfully tested locally on a zero-baseline with the DBBC in polyphase filter mode at 2Gbps. Test observations with the VLBA are planned for July 4, 2012 at X-band. Some station code was implemented at the Effelsberg Field System to allow the integration of some basic RDBE commands.

Effelsberg participated in a number of the fringe test experiments with the Russian RadioAstron satellite. The first – and successful – fringe test was on November 15th, 2011, at 18cm wavelength, followed by first 6cm fringes on December 1st, 2011. Since then, more tests have been performed at different projected baseline lengths to the satellite, most of them successful. The first 92cm fringes were found in an experiment with Arecibo, Westerbork and Effelsberg on January 25, 2012.