

EXPReS D72/SA2.27

First light and first fringes on the Effelsberg high speed data line

The Effelsberg telescope is now connected with a 10 Gb data line to the Max Planck Institute for Radioastronomy (MPIfR) in Bonn. Starting from the middle of January 2008 the MPIfR in turn will be connected via a new 1 Gbit line dedicated for e-VLBI to the European research network Géant. The first e-VLBI tests of Effelsberg with JIVE are expected for the end of January. They will initially be limited in bitrate due to the 1 Gbit connection. About 6 to 8 weeks later a 10 Gbit point to point connection from the MPIfR to Groningen/Dwingeloo will be made available by the German Research Network (DFN).

A first e-VLBI test using Effelsberg, Wettzell and Medicina was made on December 12 and good fringes were found at the Bonn correlator only a few hours later (see figure). The Effelsberg data was sent to the correlator via the new high speed data line; the data from Medicina and Wettzell arrived via Internet and a 1 Gbit test line to the correlator in Bonn.

The Effelsberg 100m telescope is situated in the Eifel mountain range about 40 km outside of Bonn. Like many other radio telescopes it is located in an isolated rural area with low population density. When e-VLBI was investigated as a future option for the EVN it was realised that high speed data connectivity is typically not available in areas where radio telescopes can be found, e.g., Effelsberg, because there are too few customers to make laying fibre economic.

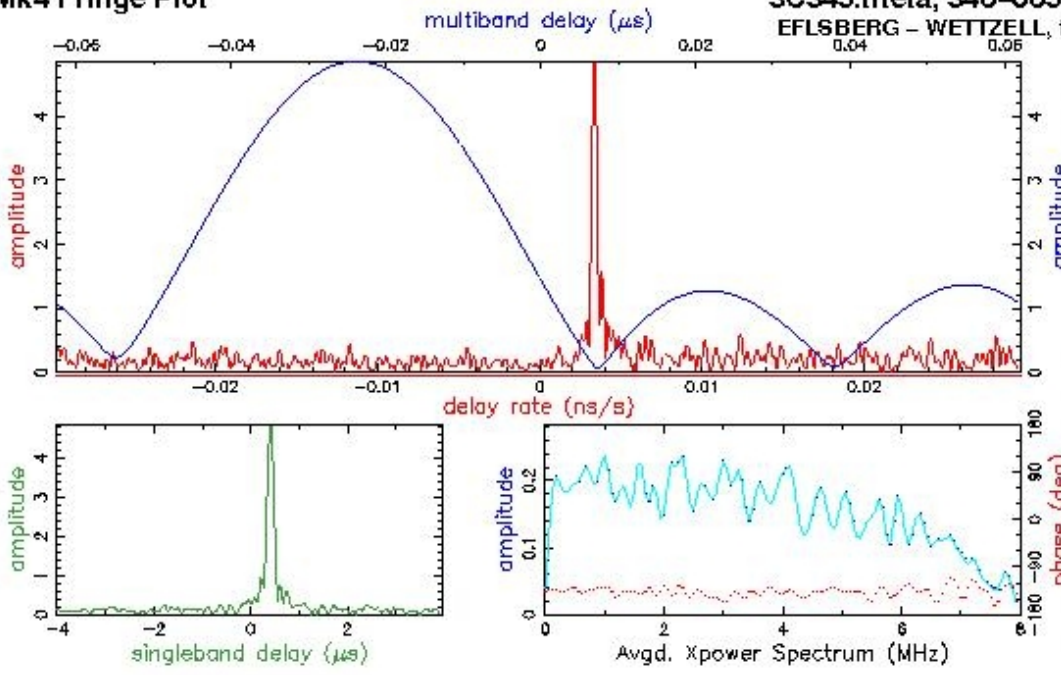
For the Max Planck Institute which operates the Effelsberg telescope the only possible solution seemed to have our own fibre laid. So a 2 M€ proposal was submitted to the Max Planck Society (MPG) in 2005 for a direct fibre connection between the institute and the telescope. Financial and political support came via a proposal to the EU which was also submitted in 2005. The EU granted an additional 210 k€ towards the project (contract No. 026642). The MPG provisionally accepted the proposal and the project to construct the high-speed data line between Effelsberg and Bonn was started, after the proposal had passed through a few committees which have to be involved in projects of this size. The path had to be defined in detail, land owners had to agree, the work had to be put out to tender and finally digging began in April 2007. On October 19th the fibre reached the institute building in Bonn and on the 29th there was first light on the fibre. In the end the MPG paid 100% of the total cost of the project of 1.4 M€. The EU funding was partially relocated to finance the connection to Géant and Dwingeloo.

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Mk4 Fringe Plot

3C345.tfteta, 346-0651_3C345, BV
EFLSBERG - WETZELL, fgroup X, pol RR



Fringe quality 9

SNR 57.9
 PFD 0.0e+00
 Intg.time 353.185
 Amp 4.962
 Phase -122.2
 Sbdelay (us) 0.449933
 Mbdelay (us) -0.023769
 Fr. rate (Hz) 0.029119
 Ref freq (MHz) 8405.4900
 AP (sec) 2.000

Exp. CORR1
 Exper # 2149
 Yr.day 2007:346
 Start 065142.00
 Stop 065742.00
 FRT 065443.00
 Corr. date: 2007:346:132457
 Fourfit date: 2007:346:134000
 Position (J2000)
 16h42m58.8100s
 +39 48'36.994"