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Astro Space Center
RadioAstron Newsletter
Number 10
December 8, 2011
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Russian version of the Newsletter can be found here:
http://www.asc.rssi.ru/radioastron/news/news_ru.pdf

RadioAstron finds first interference fringes

We are delighted to report a successful detection of the first interference fringes -- a correlated signal on ground-to-space baselines -- by the RadioAstron team at the Astro Space Center of the Lebedev Physical Institute, Russian Academy of Sciences. The fringes were found between the space radio telescope, Spektr-R, and the following ground based radio telescopes: The 32-m Russian "Quasar" antennas at Svetloe, Zelenchukskaya, and Badary of the Institute of Applied Astronomy, Russian Academy of Sciences, the 64-m Ukrainian antenna at Evpatoria, the State Space Agency of Ukraine, and the Max-Planck-Institute for Radio Astronomy 100-m antenna at Effelsberg, Germany. The observations of the quasar 0212+735 were made on November 15, 2011 at 18 cm wavelength. The attached picture shows the clear detection of the interference fringes on the baseline between Effelsberg and the space radio telescope on a delay-fringe frequency plot. The quasar 0212+735 was selected as a target by the Radioastron team on the basis of a preliminary determination of its very compact structure and high surface brightness by recent observations using the NRAO Very Long Baseline Array in the U.S.

The successful detection of interference fringes demonstrates the overall excellent status of the complex system and reflects the birth of the new international ground-to-space very long baseline interferometer, RadioAstron.

A search for fringes at other frequency bands and at longer interferometer baselines will continue until the end of January 2012, and will be followed by an "Early Science" program on quasars, AGN, pulsars, and cosmic masers. The Astro Space Center will also continue to perform in-orbit tests together with the Lavochkin Association including an effort to improve the quality of scientific data link from the space radio telescope to the ground through the Pushchino tracking station.

On behalf of the Astro Space Center, we would like to congratulate and thank the Lavochkin Association as well as the many other institutions in Russia, Ukraine, and other countries on their long lasting effort which resulted in this milestone result!

With best regards,
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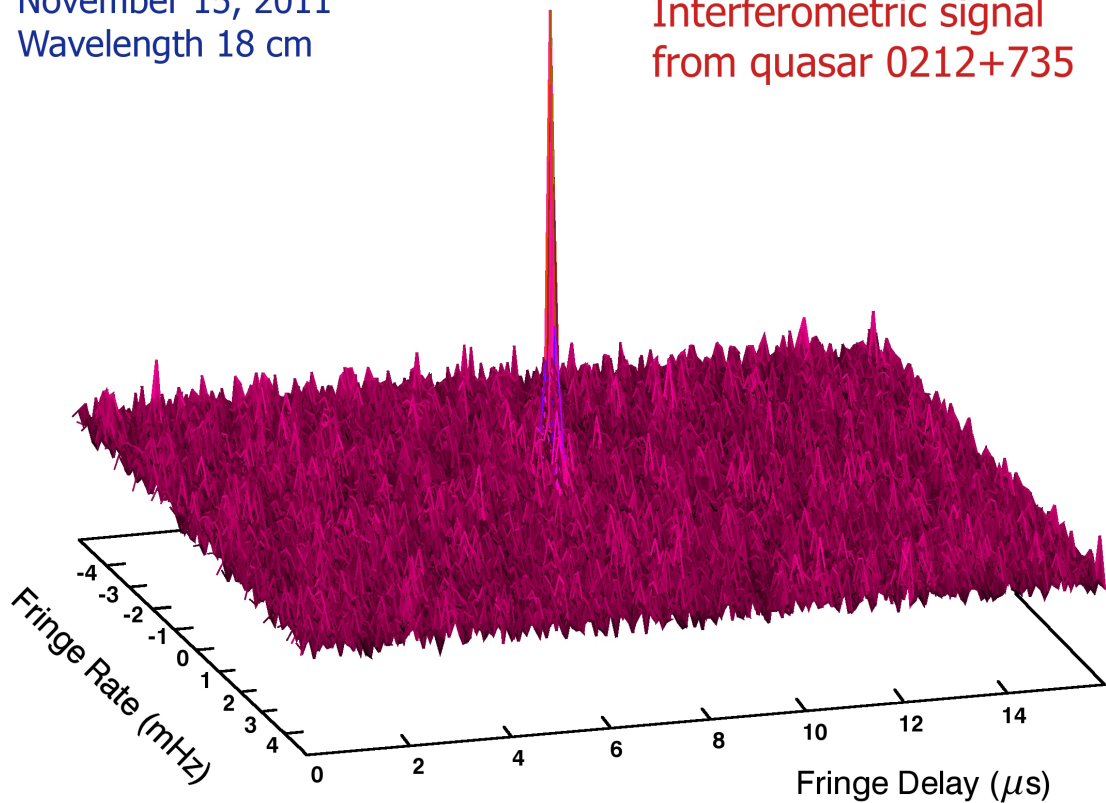
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RADIOASTRON

100 000 km from Earth

November 15, 2011
Wavelength 18 cm

Interferometric signal
from quasar 0212+735



Interference fringe on the Spektr-R – Effelsberg baseline from the quasar 0212+735 shown as a pronounced signal on a fringe frequency – delay plot. The space radio telescope was located about 100,000 km away from the Earth during the observations with a projected interferometer baseline of about 45 mega wavelengths. The amplitude is shown in arbitrary units.