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Astro Space Center  
RadioAstron Newsletter  
Number 9  
November 24, 2011  
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Russian version of the Newsletter can be found here:  
[http://www.asc.rssi.ru/radioastron/news/news\\_ru.pdf](http://www.asc.rssi.ru/radioastron/news/news_ru.pdf)

RadioAstron fringe search has started

First fringe search observations of the ground-space interferometer RadioAstron have started on November 15 and 23, 2011. Both sessions have happened successfully, observations were made on the 18 cm band. Scientific data from the space radio telescope were successfully transmitted to and recorded by the Pushchino tracking station. The observations were supported by the following ground VLBI stations: three 32-m telescopes of the Russian VLBI network Kvazar in Svetloe, Zelenchukskaya, Badary, 70-m radio telescope in Evpatoria (Ukraine), 64-m Usuda (Japan), 100-m Effelsberg (Germany), 100-m GBT (USA). Quick data quality check has confirmed that the data are suitable for the fringe search. The data analysis center in Astro Space Center of Lebedev has started the interferometric fringe search. The first RadioAstron fringe test on November 15 had been also supported by two EVN telescopes, Metsahovi 14 m (Finland) and Onsala 20 m (Sweden) as a part of the JIVE-led Planetary Radio Interferometry and Doppler Experiment (PRIDE). These PRIDE observations of the Spektr-R tone signal at 8.4 GHz will provide additional Doppler measurements for orbit determination feed into the data correlation process. The RadioAstron team plans first fringe search experiments at the 6 cm band to happen in December 2011.

First successful distance measurements with a laser ranger

Laser ranging is one of several methods being used to reconstruct the Spektr-R orbit with high accuracy required for a proper functioning of the ground-space radio interferometer. First successful laser ranging of Spektr-R has happened on November 15, 2011, from 5:30 to 6:30 Moscow time. The ranging was performed by the Observatoire de la Cote d'Azur (Grasse, France) as part of the International Laser Ranging Service. The distance measurements were done continuously during 35 minutes resulting in 875 independent measurements. The distance to the

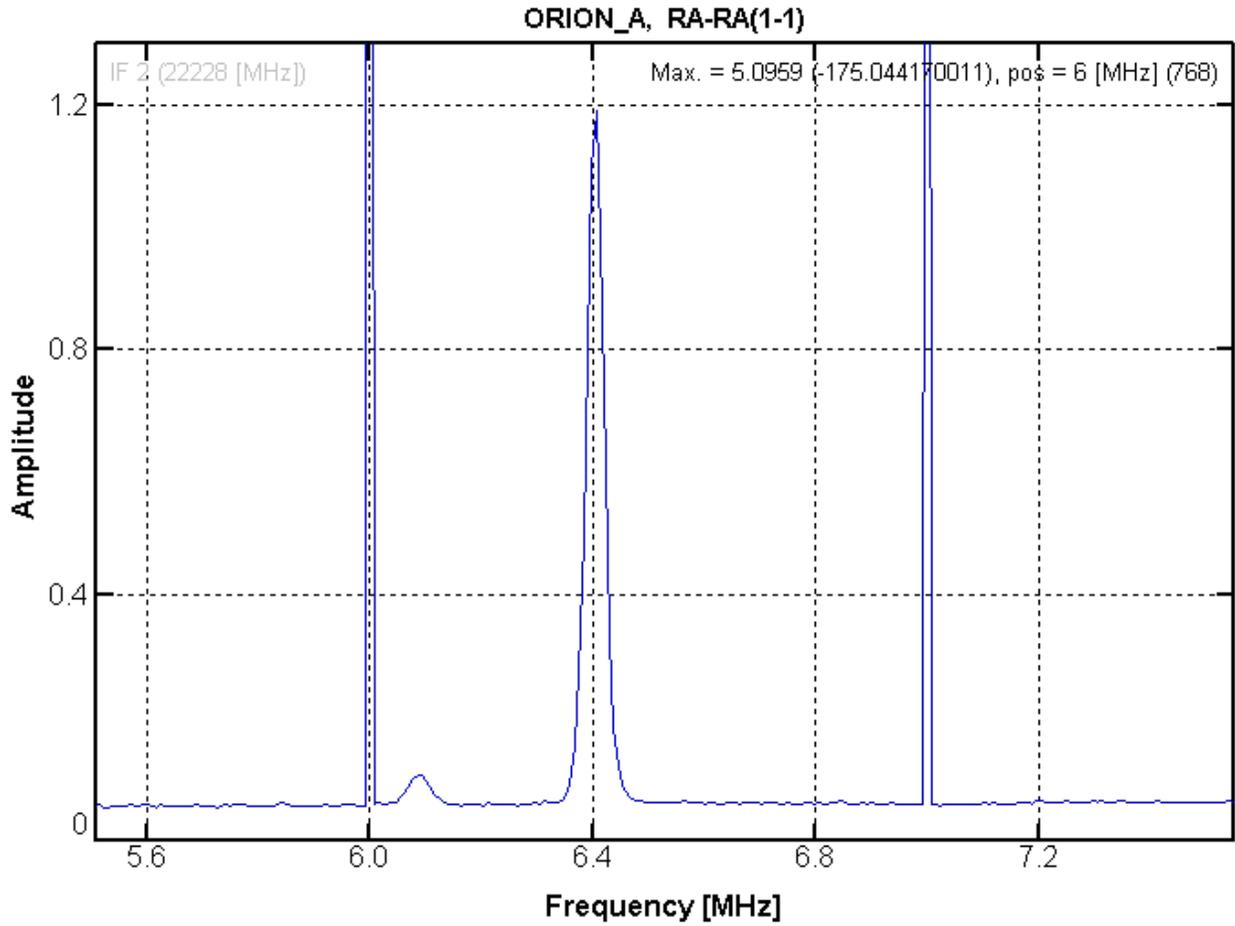
space craft has changed during this period of time from 65 to 70 thousand kilometers. Reflected signal was of a very high quality. The error of measurements is about or less than 10 cm. Results are available from:  
[ftp://cddis.gsfc.nasa.gov/slr/data/npt\\_crd/radioastro/2011/](ftp://cddis.gsfc.nasa.gov/slr/data/npt_crd/radioastro/2011/)

Pulsar PSR0329+54 and water maser Orion KL

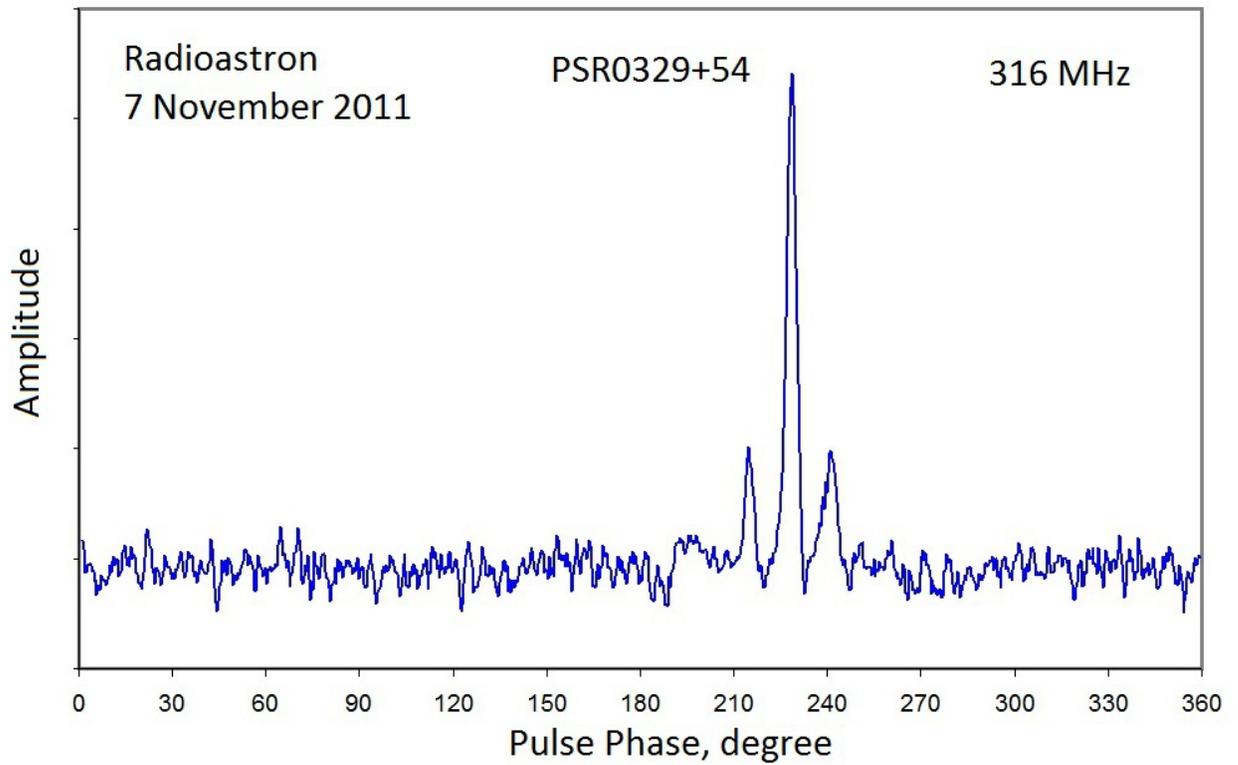
As part of the ongoing in-orbit checkout activities, the bright pulsar PSR0329+54 was observed on November 7 at 316 MHz while the water maser in the Orion KL region -- on November 8, 2011, at 22 GHz. The space radio telescope scientific data were transmitted to the ground using the wide band data link to the Pushchino tracking station. Positive data processing results can be found on the attached plots indicating a good overall performance of the system.

With best regards,  
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Results of RadioAstron space radio telescope observations of the water maser in Orion KL region, right circular polarization, 22 GHz. The high narrow peaks correspond to the pulse-calibration signal. The amplitude is shown in arbitrary units.



Results of RadioAstron space radio telescope observations of the bright pulsar PSR0329+54 at 316 MHz. The pulsar profile is generated by averaging 90 minutes of data. The amplitude is shown in arbitrary units.