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Single-satellite global positioning system

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The earth global positioning systems are based on numerous set of geodetic space probes that send special signals to receiver on the earth surface. These systems need simultaneous earth-based precision astrometrical observations of every satellite spatial position, and even so the accuracy of instant positioning is only few meters. As for the moon as well for the Mars, there is no global positioning system of this kind and it seems that it never will be build. On the other hand, we need to determine instant coordinates of points of interest on the lunar surface and coordinates of space probes near the moon or landing to target point. To get it, the Russian mission "Luna-25" will deliver to the moon light beacons that will become referent points for precision selenodetic coordinate frame. The brightness of these light beacons will be enough for observation by any on-board TV-camera from near-moon orbit and by earth-based telescopes. In the case of from-orbit observations the angular position of the beacon relative to referent stars will be measured with support of onboard orientation system. Row of such angular measurements will provide us to calculate selenodetic coordinate (latitude) of the light beacon and instant coordinates of lunar satellite with accuracy about few meters by geodetic equalization methods. The "Luna-25" will be landed near lunar pole, so its beacon will be very good for latitudes measurements, but not suitable for longitudes. This problem will be solved by "Luna-26" mission, which will be a satellite on low polar lunar orbit. It will be supplied with laser projector to illuminate existing on lunar surface retro-reflectors and observe them as point-like sources. As existing retro-reflectors are not far from lunar equator, they will be good for longitudes determination.

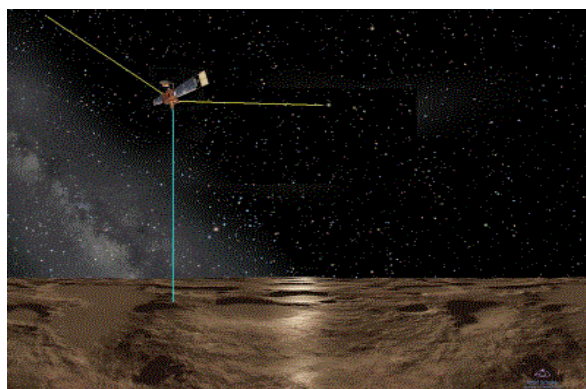


Figure 1. Angular position of lunar light beacon relative to stars can be determined from orbit by on-board TV camera and satellite's

Biography

Alexander V Bagrov as Astronomer studies minor bodies of our solar system. Besides that, he was Leader of Russian team that worked out space optical interferometer for precision measurements of stellar coordinates. In the field of Space Technique, he proposed interstellar spaceship with super-conductive magnet mirror, lunar elevator and method of non-rocket launch from mars, solar 3-D printer for lunar building. He was honored by the Russian Cosmonautic Federation to be "Space Technique Constructor". He has completed Doctor of Philosophy and Doctor of Science in Astronomy at Moscow State University. His major achievements include "Research in theory of the origin of the solar system and its planets, meteors study, asteroid-comet hazard, project of space probes OSIRIS, LIDA and STAR PATROL".

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