

CONTRIBUTIONS OF CHANG'E-3 RADIO BEACON TO SELENDESY

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Abstract: The Chang'E-3 has successfully landed softly on the lunar surface on December 14, 2013, which was designed for scientific observations in place for more than 1 year with transmitting X-band signals. It can be used as a very good radio beacon on the lunar surface. The Lunar Radio Measurements (LRM), including the ranging, Doppler, carrier phase, VLBI time delay and delay rate can be acquired from ground TT&C antennas and VLBI antennas, which will greatly contribute to space geodesy than Lunar Laser Ranging(LLR) which can only provides the ranging observation. In this paper, the condition of observation for Chang'E-3 Lander by Chinese Deep Space Network(CDSN) and International VLBI Service(IVS) antenna is introduced. Then the MEKAS (Moon Earth Kinematical Analysis Software) is developed, which can simulate all kinds of observations mentioned above, carry out covariance analysis and determine the parameters, including CE-3 position on the lunar surface, ground site coordinates, EOP and love number. At last, the preliminary result of Chang'E-3 Lander's position and Earth rotation parameters is given.

Keywords: *Chang'E-3, X-band transponder, Lunar Radio Measurement.*