

Simulation of lunar gravity field recovery based on ChangE-3 orbiters

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The lunar gravity field is one of the key topics of lunar scientific research, and is the foundation to understand the inner structure and conformation of lunar. Until now, many mission devoted to lunar gravity field, such as LP, SELENE, LRO etc., are all in polar orbit. With orbiters in different inclination, the correlations between some lunar gravity field harmonic coefficients will be declined, and the solution precision should be improved. ChangE-3 will be launched around 2015, and there will be two orbiters. The orbiters will flight in inclination about 45 degree. In this paper lunar gravity field recovery is simulated by combining one year tracking data of ChangE-3 orbiters, the solution is assessed by several methods, such as orbit determination residuals, gravity spectrum and correlation of spherical harmonic coefficients. By the way, the same-beam VLBI measurements between two orbiters are used in precision orbit determination and gravity field recovery, and its contribution is evaluated correspondingly.

Keywords: lunar gravity field, same-beam VLBI, precision orbit determination