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PREDICTION OF LANDING POINT OF CHANG'E-1 LUNAR PROBE USING SHORT-ARC USB
AND VLBI TRACKING DATA

Abstract

After 16-month on-orbit flight, Chinese first lunar satellite Chang'e-1 hit the moon within Mare Fecunditatis at 4:13 p.m. (Beijing Time) on March 1, 2009 by active control. East China's Qingdao and west China's Kashi Unified-S-Band(USB) stations have witnessed this exciting moment. In this paper, we calculate Chang'e-1 orbit parameters utilizing the short arc observation data provided by these two USB stations and four VLBI stations belonged to China VLBI Net(CVN), investigate the prediction method for landing point with different lunar topography data models, and analyze the accuracy of predicted landing point with comparison to the result distributed by mission control center. It is expected that the conclusions drawn in this paper can provide useful references to future lunar-mission soft-landing control and orbit measurement.