

УДК 629.78

ESTIMATION OF POTENTIAL NAVIGATION ACCURACY USING GNSS ON FIRST STAGE OF TRANSFER TO THE MOON

© Al-Saliha Ibraheemalkhalil Emad Khudhur

e-mail: ibrahem.imad67@yahoo.com

Samara National Research University, Samara, Russian Federation

Reaching the Moon poses very strict requirements in terms of performance, flexibility and cost for all the spacecraft subsystems. These requirements become more stringent if the mission is designed to be accomplished using a small spacecraft. The navigation subsystem is without any doubts essential and nowadays, several systems offer different solutions to the navigation problem. Global Navigation Satellite Systems (GNSSs), such as GPS, GLONASS, and the future Galileo and BeiDou, were originally designed to provide position, velocity and timing (PVT) services for land, maritime, and aircrafts users. According to the European Space Agency (ESA) Lunar Exploration program, the use of GNSS weak-signal navigation in future lunar exploration missions has the potential to increase the robustness of the navigation during all mission phases and improve considerably its autonomy. The major objectives of the ESA Moon-GNSS project have been to determine the feasibility of using GNSS (GPS/Galileo) weak-signal technology in future lunar missions to improve the navigation performance in terms of accuracy, cost reduction and autonomy. Finally, the objective of this work is to Estimation of potential navigation accuracy using GNSS on first stage of transfer to the Moon.