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ANALYSIS OF A SMALL-SATELLITE CONSTELLATION FOR LUNAR NAVIGATION  
CAPABILITIES

**Abstract**

Global Position Systems are not only used in terrestrial applications, but also in low-earth orbit satellites and in higher altitude missions. Record-breaking NASA mission MMS for farther navigation with GPS signals, demonstrated the capabilities of existing GNSS systems to provide PNT services in the Cis-lunar space.

Moreover, the increased amount of Moon missions over recent years, shows the requirement of navigation capabilities for Low Lunar orbiters, Moon Lander, Moon rovers, and manned missions.

This paper will study in detail the state-of-the-art technology for Moon Navigation and will propose a system design of small satellites to provide position, navigation and timing services on the Moon.