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CUBESATS BASED GLOBAL POSITIONING SYSTEM FOR MARS (MARTIAN GPS)

Abstract

Mars tugs at the human imagination like no other planet. Multiple commercial and government sponsored missions for Mars have been announced for the upcoming decade. Accurate position information is imperative for both robotic and human missions planned on the martian surface.

The research presented in this paper covers the constellation design of a Global Positioning System (GPS) for Mars using CubeSat platform. Advancements in chip-scale atomic clocks (CSAC) make them suitable for use aboard CubeSat platforms. This paper describes the overall constellation architecture, requirements of Martian GPS, design goals performance metrics, constellation comparisons and system level architecture of a CubeSat in Martian GPS.