Nanosatellite navigation with the WMM2005 geomagnetic field model

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Abstract: Most current space missions require accurate knowledge of the satellite attitude and orbital position. Here the navigation system design will focus on the use of only one sensor, a magnetometer. A nanosatellite is considered as it is a straightforward solution to reduce the cost of the mission and provide space emerging countries like Malaysia with access to space. Therefore, the development of innovative navigation algorithms is of foremost interest as it will allow us to use fewer and cheaper sensors. This paper describes a navigation concept applied to a nanosatellite equipped with only a magnetometer. It emphasizes the latest geomagnetic field model available and provides a brief overview of the magnetometers used in micro- and nanosatellites. © TÜBİTAK.

Author Keywords: AMR magnetometer; Geomagnetic field model; Nanosatellite; WMM2005 model

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