

## عنوان مقاله:

Designing a Hybrid GEO-LEO Constellation Pattern for Regional Satellite Navigation in Iran

## محل انتشار:

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## خلاصه مقاله:

In this paper, a few hybrid satellite constellations including combinations of LEO and GEO satellites for providing satellite navigation and positioning services for users in Iran have been designed and proposed. The performance of the constellations has been analyzed based on DOP values variations. It is shown that theoretically, it is possible to provide satellite positioning and navigation service with acceptable DOP values based on the introduced hybrid pattern including three GEO satellites and a constellation of about ۳۰ to ۶۰ LEO satellites in ۳ or ۴ orbit planes. The design has been performed based on studying the skyplot of the Iranian territory considering the GEO satellites as fixed points, and then determining the effect of the instantaneous position of the LEO satellites on the DOP values. A few LEO constellations have been designed to provide best DOP values based on the skyplot analysis results. Then, scenarios including similar GEO satellites and different patterns for LEO satellites have been simulated for half a sidereal day. The performance of the hybrid constellations provides satisfactory results with the average PDOP values of less than ۴ which is acceptable. Optimizing the resulted pattern can lead to more desirable performance. In addition to navigation mission, hybrid constellations can perform other missions. Therefore, the proposed constellations can be .operated as multi-mission space platforms

## کلمات کلیدی:

Simulation, Coverage analysis, DOP, Skyplot, Iran

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1706303>

