

# Localization of an air target by means of GNSS-based multistatic radar

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**Abstract:** The research of employing GNSS satellites as transmitters of opportunity for passive bistatic and multistatic radars to detect [1, 2], track [3] and localize [4] an aircraft has aroused some interest lately. A main benefit of utilizing GNSS signals for such application is because of its global coverage. Furthermore, the presence of several GNSS satellites at various positions provides an advantage for using this application, as such geometrical arrangements enable the radar to receive reflections of the target from different angles.

In this work, we offer a contribution to multistatic GNSS-based radar methods, which allows for positioning of air targets provided that pseudorange of reflected signals have been preliminarily measured. This novel computational method consists from decomposition of non-linear function in a Taylor series and the Least Squares method. Employing pseudorange equations based on reflected signals from multiple satellites should make it possible to determine a position estimate of the aircraft more accurately than by means of the bistatic radar.

**Keywords:** GNSS, multistatic radar, GPS, air target, reflected signals

**2010 Mathematics Subject Classification:** 65D15, 94A12

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