

Tiberius, Christian**Integer least squares for precise GPS positioning.** (English) Zbl 1058.86002

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Summary: Precise ranges for positioning with the Global Positioning System (GPS) are obtained from carrier phase measurements. These measurements of range inherently contain an integer ambiguity, to account for a mismatch of a whole number of wavelengths or cycles. In the last decade, the least squares principle for parameter estimation has been successfully extended to the integer domain, providing a powerful instrument to resolve the ambiguities

This contribution identifies the actual problem with the unknown integer cycle ambiguity, explains the basic theory of integer least squares and reviews some of the high precision positioning applications that come into reach when the integer carrier phase ambiguities can be resolved quickly and correctly.

Reviewer: [Reviewer \(Berlin\)](#)**MSC:****86A30** Geodesy, mapping problems**65D10** Numerical smoothing, curve fitting**Keywords:**

Global Positioning System; carrier phase measurements; least squares principle; parameter estimation; high precision positioning