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ABSTRACT

Method for estimating the direction of arrival of navigation signals at a receiver after reflection by walls in a satellite-based positioning system

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The method consists in estimating a position of the receiver (4), placed aboard a moving object, on the basis of the navigation signals emitted by satellites (51, 52, 5n) received by an antenna of an array of antennas placed on the moving object and in using a three-dimensional geographical map to deduce, geometrically, on the basis of the position of the receiver (4) and of a ray casting starting from the receiver, the number of paths reflected (15d) on walls of buildings (12a, 12b) present in a scene corresponding to an environment surrounding the receiver (4). The thus determined number of reflected paths is used to initialize an algorithm for estimating the angles of arrival of multi-paths making it possible to deduce therefrom the angles of arrival of the paths reflected on the walls before reaching the receiver (4). Optionally, the method can furthermore comprise a step making it possible to bound the distance information error due to a multi-path so as to render the estimation of direction of arrival of the signals more efficacious.

The invention applies to a satellite-based positioning system.

Fig. 3