

MULTIPATH MITIGATION IN A GNSS RADIO RECEIVER

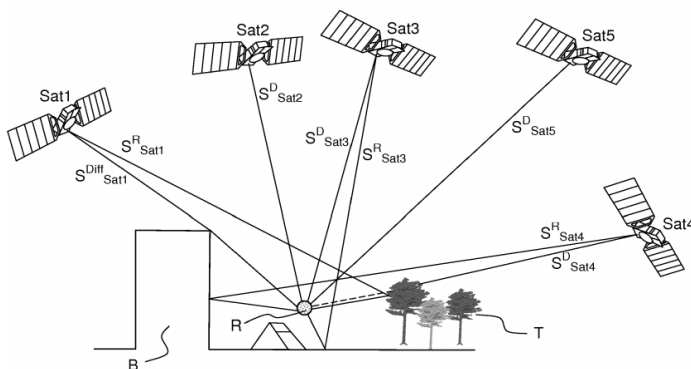
Technological advantages

Innovative :

- Use of different polarization (left/right) in a receiver antenna(s).
- Possible use of one pseudo-range information (weighted or not) from a second antenna (left).

Efficient :

- Does not require large computing power and high power consumption.
- Significant reduction in multi-paths issues.



Example of a situation in which a receiver positioning is impaired by multi-paths (reflections) issues.

Invention synthesis

The invention deals with GNSS receivers positioning accuracy especially when multi-paths are an issue.

Because of multi-paths issues (reflections), the 4 pseudo-range calculations from at least 4 satellites can be impaired and the positioning accuracy degraded.

Methods to mitigate multi-paths related errors can be complex and costly because of hardware (multi frequencies, antennas...) and software (algorithms, computing power) requirements.

The invention is based on using a bi-polarized antenna or two cross-polarized antennas. From the first right hand circularly polarized signal acquisition (as for GNSS signals), at least 3 pseudo-range values are used. Using quality indicators and comparing with at least one pseudo-range of the second antenna (left hand polarization), the receiver position can be calculated.

Commercial benefits

- Significant improvements in GNSS positioning using antenna(s) cross-polarization.
- Suited to complex environments (cities, ...).
- Limited additional hardware and software requirements.

Potential applications

- All GNSS positioning constellations.
- Positioning in complex urban environments (cars, smartphones, IoT...), forests, mountainous locations.

Patented invention - under license.