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## 多径效应对GPS载波相位观测量的影响

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### MULTIPATH EFFECTS ON GPS CARRIER PHASE OBSERVABLE

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摘要

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**摘要** 推导了GPS接收机中多径效应引入的最大载波相位跟踪误差的闭合形式。得到以下结论：当直达信号跟踪误差不超过1码片时，最大载波测相多径误差为1/4周，该值出现在测码伪距多径误差最小的情况下；当直达信号跟踪误差超过或等于1码片时，接收机跟踪多径信号，信号误检发生。

**关键词：** 全球定位系统 多径效应 载波相位

**Abstract:** The closed expression form of the maximum carrier phase tracking error caused by multipath effect is derived in this paper based on multipath signal characteristics and GPS receiver work mechanism. The conclusions are drawn: When the code tracking error of a direct signal is no more than one chip and the code ranging multipath error is the least, a maximum carrier phase error occurs and its value is a quarter cycle. When the code tracking error of a direct signal is equal to or more than one code chip, the multipath signal is being tracked and false detection occurs. Because the maximum carrier phase multipath error is much less than the maximum code ranging multipath error, carrier phase differential technology causes extensive attention in GPS application, but it is still a main obstacle in precise measuring.

**Keywords:** global positioning system multipath effect carrier phase

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