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改进的GPS/INS组合导航选星算法

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IMPROVED ALGORITHM OF SELECTED SATELLITE USED IN GPS/INS INTEGRATED NAVIGATION SYSTEM

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摘要 在已有的 GPS定位的选星算法的基础上,从组合系统量测矩阵出发提出了一种适用于 GPS/INS组合导航的选星算法。此算法在原有算法的基础上,考虑了卫星仰角、方位角对卡尔曼滤波器可观性的影响,避免因观测量与系统状态间关联项的减少而导致的滤波器可观性下降,从而保证滤波器性能的稳定

关键词： 全球卫星定位系统(GPS) 惯性导航系统(INS) 卡尔曼滤波

Abstract： Based on the existing algorithm of selected satellites used in GPS positioning, an improved algorithm is presented. It's more adapted to the integrated navigation system of GPS/INS. The novelty lies in that the effect of the satellite elevation and azimuth on the observability of Kalman filter is taken into account in this algorithm. It can avoid weakening the observability of Filter induced by the decrease of relevancy between measurement and state. Thus it can ensure the stability of Kalman filter.

Keywords： global po sitioning sy st em(GPS) iner tial navigation system(INS) Kalman filter

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