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HOW IMPORTANT ARE GNSS RECEIVERS IN AFTS?

Abstract

Autonomous flight termination systems (AFTS) are essential for the initial stage of launchers. AFTS comprises a variety of sensors, such as global navigation satellite systems (GNSS) receivers and inertial measurement units (IMUs). The AFTS needs to provide a reliable position during the entire trajectory of the launcher from the ground to the targeted orbit (i.e., LEO, GEO, HEO). Suppose the estimated position is outside the launch corridor of the launcher. In that case, the AFTS should estimate the position on time to destroy the launcher and not lead to any safety-critical state.

The paper and presentation show the importance of GNSS receivers in AFTS. First, state-of-the-art architectures are shown, and then advanced tracking architectures to achieve a continuous and reliable position, velocity, and time (PVT) solution are presented.