

# **A Detection Algorithm of Atomic Clock Frequency Jumps with the Prediction Wiener Filter**

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Atomic clock is of vital importance to Global Navigation Satellite System (GNSS), and its excellent performance ensures GNSS users precise position and time information. Any clock anomalies can affect the performance of the system. Rapid detection of clock anomalies is therefore of the utmost importance, especially for the safety-critical applications, e.g., aircraft landing. In this paper, we proposed an optimal prediction wiener filter applicable to atomic clock frequency jump detection. A detection method is provided base on the optimal filter. The case of frequency jump has been investigated in detail by simulation via measurements of a space-based rubidium frequency standard. Characteristics of the method have been discussed and examined. Simulation results show that this method can detect weak frequency anomalies quickly and effectively. Such a method is simple to implement and can provide an effective solution to GNSS satellite clock autonomous integrity monitoring.