

SPACE COMMUNICATIONS AND NAVIGATION SYMPOSIUM (B2)

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chinnyhaochen@126.comAPPLICATION OF ENSEMBLE EMD IN RANDOM ERROR SEPARATION FOR MEASUREMENT
DATA OF FLIGHT VEHICLE**Abstract**

The problem of random error separation for measurement data of flight vehicle is considered. To solve this problem, an ensemble empirical mode decomposition (EEMD) based random error extraction method is proposed. The real motion trail of the flight vehicle and system error of the measurement equipment is viewed as the trend term of the measured data. The key assumption is that the trend term can be represented by the sum of intrinsic mode functions generated by the EEMD decomposition of the measurement data. According to the property of frequency and energy of each mode of EMD, an energy-ratio method is used to determine the number of modes that can represent the trend, thus extracting the random error. The EEMD method is used to avoid the mode mixing problem of EMD. To prove the practicality and effectiveness of this method, it's applied to simulated real vehicle trajectory contaminated with random error, as well as the real-world measurement data of radar.