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Author: Dr. Jiahong Chen  
China, stone\_cjh@sina.com

A NEW OPTICS AND RADAR STRAP-DOWN MEASURING SYSTEM

**Abstract**

A new angle measuring method was proposed followed by the discussion of the insufficiencies of traditional Radar angle measuring methods. Essentially, it is a new aircraft measuring system i.e. the optics and radar strap-down measuring (ORSM) system. By immovably mounting an optical device (star sensor) on a radar antenna, the optical high precision and radar stable tracking performance can be comprehensively utilized in the new system. The performance and efficiency of radar angular measuring of the near-Earth space and Earth-orbiter targets will be improved through a comprehensive data processing operation of dynamic electric miss distance, stellar optical measurement data, and photoelectric deviation. On the other hand, the original measurement data of radar will be used to predict the line of sight (LOS) direction of star sensor, which can greatly improve the processing speed of the star matching of the new system. The construction method of ORSM was developed with the studying of the measuring principle, and the suggestion of identification and checking up method of the system precision. The new ORSM system performance and correctness was analyzed by semi-physical simulation. It can achieve arc seconds precision in ordinary ground radar systems.