

ANGLE BASED COMPUTATION WITH CUT-OFF ALGORITHM FOR MOVING TARGET

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ABSTRACT

Performance evaluations of a maneuvering target require Radars, Electro-optical tracking systems and telemetry systems to track the target. Angle based tracking system uses only Azimuth & Elevation which may be generated either from Electro-optical systems or any other antenna based tracking systems which provide Azimuth & Elevation. In such case minimum of any two systems are required for position calculation. For calculation of position, if only two such systems are considered then computation is simple. Our proposed algorithm considers two or more number of tracking systems. For such angle based tracking system, even if the measured azimuth and elevation are within the error limit of the instrument, still the problem of deviation of computed position from the true position occurs as the target moves far away from the systems. This is because of low apex angle generated by tracking systems. In this paper, algorithm to compute the position of the target is presented. Further an algorithm of Cut-off has been presented based on the computed apex angle in real time environment which is used efficiently to eliminate the problem of deviation. Radar measures Azimuth, Elevation & Range information and Telemetry system uses Inertial Navigation System for providing more accurate position information at far distance of the target. The performances of algorithms are analyzed based on various real time track data which are compared with Radar and Telemetry systems.

KEYWORDS: Apex Angle, Electro, Optical Systems, WGS-84 System, Direction Cosines