Effect of observation by angle only navigation to plan non-cooperative approach for ADR

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This paper studies the effect of observation by angle only navigation to plan non-cooperative approach for Active Debris Removal (ADR).
It is necessary and important to estimate the ranging accuracy and observability in case of applying angle only navigation, and the requirements and/or conditions for orbit planning about ADR approach will be studied, because the ranging accuracy derived from observed elevation and azimuth angles of target object from the chaser depend on the position and velocity of the planed relative orbit.
This paper also discusses (1) the condition of the angle only navigation which provides observability, (2) some approximations of formulation, (3) some necessary augmented data from other sensors such as GPS, and (4) the amount of delta velocity to keep the observability of relative navigation for ADR approach.
As the requirements for the ADR approach orbit, the orbital safety against the thruster failure, shall require such a planning that avoids no collision between the chase and the target object, and this paper will discuss the relationship between the ranging accuracy and observability mentioned above and orbital safety by using some criteria.