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Selection of optimum time for spacecraft collision avoidance operation

Zhang Rong Zhi Xi'An Satellite Control Center, China

More than 23,000 space objects around the earth orbits in total are regularly tracked by the space surveillance network and maintained in the catalogue, which cover objects whose size are larger than approximately 5 to 10 cm in low earth orbit (LEO). Most of these space objects, especially the size of only several centimeters, are called space debris which are very dangers for in-orbit operational spacecraft because of potential collision. Space debris collision avoidance has almost been a routine activity for incapable space powers for the purpose to ensure the security of their spacecraft operation. In view of the current engineering and technological basics, the confidence level of collision warning is still to be further improved. In engineering, both the ability of tracking space objects. But according to current technologies, the prediction accuracy of orbit dynamics model, especially low orbit atmospheric model, seriously decreases the accuracy of precise orbit prediction with time prolongs. On one hand, the shorter the time duration between the prediction and potential and potential collision is, the higher confidence level of the collision avoidance warning will be. On the other hand, the preparation procedure of spacecraft maneuver and the power consumption budget require collision avoidance to be made earlier. This paper focuses on the selection of the optimum time for spacecraft collision avoidance operation.

Biography

Zhang Rong Zhi has his expertise in evaluation and passion in the spacecraft collision avoidance warning and operation. He leads a team for spacecraft collision warning and avoidance operation is Xi'an satellite control center about two decade. He is mainly interested in space missions.

rongzhizhang@sina.com

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