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Exploration of Near Earth Asteroids (06)
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EARTH SAFETY - AGAINST VERY RARE BUT DEVASTATING ASTEROID COLLISION

Abstract

Scientifically, near earth asteroid (NEA) collision is considered as hazardous but very low risk for earth safety. The possibility could be estimated from the observation of NEA, and until now no possible hazardous asteroid collision has been found. From the archaeology, the age of the dinosaurs was suddenly shutdown at about 65 million years ago. The most popular and promising theory of this event is the NEA collision of large asteroid, 10km diameter. The frequency of such large 10km size asteroid collision is estimated as once per 100 million year. Theoretically the risk could be defined as Damage x Possibility. Thus even-if we assume the total global GDP will be lost by such 10km asteroid collision, the estimated risk value would only be a few M$. Thus nominal risk evaluation of asteroid collision may be considered as low priority and might not be able to justify the human space exploration with more importance than science. However, from the recent Fukushima' s experience, we have learned that for the devastating large scale case, the nominal risk evaluation could not work. For Fukushima, the prepared compensation fund had run out in a few days, with the excuse of Sohtei-gai = out of assumption. The biggest lesson, learned from Fukushima, is that we shall never ignore the small risk of rare catastrophic damage. In the paper, I will discuss the risk evaluation scheme for mass destructive event, from the lessons learned of Fukushima, examine the importance of the earth safety goal in the space exploration, and also discuss the role of human space exploration in the way for earth safety goal.