

BASE: A PROPOSAL OF NANOSAT ASTEROID MISSION

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ABSTRACT

This paper proposes a low-cost mission to an asteroid, which can be handled mostly by a small organization. The basic idea is to join the interests of the planetary defence community with the interests of the amateur radio community, to send payload of amateur radio beyond GEO (geostationary earth orbit).

In the past two decades ago the Radio Amateur Satellite Corporation developed satellites and launched them by piggy-back payload. But then the economic requirements changed. In the cubesat age the free payload capacity can be sold. Cost-efficient piggy-back is not available anymore. But there is still experience present. For example the amateur radio community has a 20m-antenna in Bochum, Germany. If it can be used, this can reduce the cost of such a mission.

In this planetary defence community it is not necessary to explain the importance of the whole process of discovering, tracking and if necessary deflecting an asteroid before it impacts. In this process is one point, to send a spacecraft to the asteroid, to determine the orbit accurate in order to decrease the LOV (line of variation) and to decide, if a deflection is necessary or not.

A low-cost spacecraft would be launched earlier, this decision can be made earlier and it is more time for the deflection campaign. So the goal of this proposal is to demonstrate, that a low-cost spacecraft is able to record only the important data of an asteroid (Basic Asteroid Explorer) for designing an asteroid deflection mission early.

Furthermore the aspect of publicity is important, if other organizations like the amateur radio community are involved: More public recognizes the subjects of planetary defence community.

In this paper, a target asteroid is selected, which is suitable for both payloads. Details of the implementation are discussed and the possibility of realization is estimated. This project is at the beginning. Necessary is the participation and the cooperation of the community just as in those days in the past with the amateur radio satellites.