**Proposal Requirements of Near-Earth Asteroid Defense Space Disposal Solution**

**-First Mission**

1. Design Requirements

Design an overall plan for China's First Near-Earth Asteroid Defense Mission, including but not limited to target selection for defense, analysis of disposal methods, and modeling of disposal impacts. The mission plan must adhere to the following principles:

1. Safety: The selected target should pose no threat to Earth after disposal. Please avoid targets with impact risks listed in NASA/CNEOS/Sentry.
2. Accessibility: The selected target should be at a moderate distance from Earth, providing an analysis of orbit inclination, eccentricity, etc., demonstrating the feasibility of engineering implementation.
3. Accuracy: The velocity change of the target after disposal should be significant, efficiently diverting the target. Quantitative analysis of the disposal effect is required to achieve a substantial velocity increment for the asteroid. The change in distance between the target asteroid's perigee and Earth after disposal should be significant.
4. Observability: There should be opportunities for observation before, during, and after the engineering implementation.
5. Timeliness: The selected targets should align with the launch windows between 2025 to 2030.
6. Cost-effectiveness: The target asteroid should have a diameter of 20m-90m, and the total spacecraft weight should not exceed 2500kg.

Additionally, a reasonable space disposal method must be chosen, and an analysis of launch windows and orbits should be conducted. Specify the main system indicators, provide concrete plans for mission implementation and observation assessment, and conduct an analysis of the impact of space disposal.

1. Submission Method and Requirements

Each proposal shall include a design report (mandatory), demonstration video (optional), and model codes (optional). The scoring proportions are 50%, 30%, and 20%, respectively. All files should be placed in a folder named after the team. The folder should then be compressed into a .zip or .rar format. Specific requirements for each section are as follows:

1. Design Report

A complete design report compiled in PDF should be submitted. The report may include separate chapters focusing on in-depth analysis of key technologies of interest, including but not limited to asteroid dynamics models, high-precision orbit prediction, multi-task multi-objective orbit optimization, high-speed high-precision navigation, high-speed precise impact simulation, target characteristic measurement, asteroid defense and disposal effectiveness simulation and validation, and asteroid disposal effect assessment based on multi-source data fusion. Additional points will be given during the evaluation for the difficulty and innovation of the specialized topics. Also, adjustments to the report template can be made based on actual circumstances.

1. Demonstration Video

Present spacecraft orbit transfers, asteroid defense, and disposal processes in the form of animation or video. The video should be as concise and clear as possible and additional points may be awarded for the inclusion of text or voiceover explanations.

1. Model Codes

Provide spacecraft models, orbit models, simulation models, source code, etc., developed during the design process. This should support on-orbit demonstration validation and the combination of collision assessment, accompanying correspondent explanatory documentation. Additional points may be awarded for using domestically-developed software.