**Teaming up for Asteroid Deflection**

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Abstract

The objective of defending Earth from a collision with an asteroid calls for informed cooperative efforts to effectively deflect the object away from the planet. That process starts with educating students about the asteroid threat and inspiring them to become the next generation of planetary defenders by picking Science Technology Engineering and Math (STEM) careers. A simple tool for introducing students to the physics of asteroid deflection is an online web application called the NEO Deflection App (NDA) developed collaboratively by The Aerospace Corporation and NASA’s Jet Propulsion Laboratory (JPL). The NDA simulates hypothetical asteroids on collision course with Earth and designs a mission to kinetically strike and deflect the asteroid with a spacecraft launched from Earth. The NDA is accessible on JPL’s website: <https://cneos.jpl.nasa.gov/nda/>

The intent of the app is to demonstrate the basics of asteroid deflection mission design to individual users. The Aerospace Corporation has developed a program to conduct asteroid deflection exercises with the NDA and adds a collaborative educational context to the App. Several participants are grouped into teams and given an asteroid collision scenario to solve. Teams aim to win the exercise by maximizing the scale of deflection with minimum usage of launch vehicles. Because there could be many solutions to the problem, each team may arrive at a different performance metric. The team with the highest performance metric wins the competition. The teaming NDA is accessible on Aerospace’s website: <https://planetary-defense.aerospace.org/>

Typical asteroid deflection sessions consist of 2 to 4 phases of increasing challenge, achieved by shortening the time until impact and making incoming objects larger at each level. The teaming NDA supports virtual events across regions and adapts well to the post-pandemic classroom. The presentation reviews several contests that were held in the last two years and describes the potential for future events.