

**PDC2015
Frascati, Roma, Italy**

- Planetary Defense – Recent Progress & Plans
- NEO Discovery
- NEO Characterization
- Mitigation Techniques & Missions
- Impact Effects that Inform Warning, Mitigation & Costs
- Consequence Management & Education

IAA-PDC-15-04-10

**An Innovative Solution to NASA's NEO Impact Threat Mitigation
Grand Challenge and Flight Validation Mission Architecture
Development**

Bong Wie
Asteroid Deflection Research Center
Iowa State University, Ames, IA 50011

This paper presents the results of a NASA Innovative Advanced Concept (NIAC) Phase 2 study entitled "An Innovative Solution to NASA's Near-Earth Object (NEO) Impact Threat Mitigation Grand Challenge and Flight Validation Mission Architecture Development." This NIAC Phase 2 study was conducted at the Asteroid Deflection Research Center (ADRC) of Iowa State University in 2012–2014. The study objective was to develop an innovative yet practically implementable mitigation strategy for the most probable impact threat of an asteroid or comet with short warning time (< 5 years). The mitigation strategy described in this paper is intended to optimally reduce the severity and catastrophic damage of the NEO impact event, especially when we don't have sufficient warning times for non-disruptive deflection of a hazardous NEO. This paper provides an executive summary of the NIAC Phase 2 study results. Detailed technical descriptions of the study results are provided in a separate final technical report, which can be downloaded from the ADRC website (www.adrc.iastate.edu).

Keywords—NEO impact threat mitigation, planetary defense, nuclear subsurface explosions, hypervelocity asteroid intercept vehicle (HAIV)