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Poster Session (P)Author: Mr. Hannes Mayer
Austria

NUCLEAR WARHEADS AND PLANETARY DEFENSE

Abstract

Planetary defense or asteroid impact avoidance is a general term describing a number of methods to divert or destroy asteroids or other near-Earth objects in order to prevent potentially catastrophic impact events. The impact of a sufficiently large asteroid could inflict massive damage and cause major planet-wide disasters, such as tsunamis, fire storms and an impact winter (comparable to the so called “nuclear winter”). Asteroid impact is also widely considered a likely reason for the extinction of several species, most notably the dinosaurs. In the short term there is not a great likelihood of a disastrous collision of Earth with an asteroid but there is a certain risk that one will happen in the future and it might seem reasonable to take possible defensive measures into account. One such possible defensive measure would be to detonate a nuclear warhead on, above or slightly beneath the surface of the asteroid, in order to deflect and/or destroy that celestial body threatening the planet Earth. This might be the only measure to protect Earth from asteroids, on short notice. To reduce preparation time and enhance mission readiness, it has from time to time even been proposed to preposition nuclear warhead carrying missiles in outer space. However, international law has certain reservations against nuclear weapons in space. The 1967 Outer Space Treaty forbids to station nuclear weapons or other weapons of mass destruction in Earth orbit, the Moon or other celestial bodies or otherwise in outer space. The Partial Test Ban Treaty and the Comprehensive Nuclear Test Ban treaty prohibit nuclear explosions in outer space. But nonetheless questions arise: Destroying or deflecting a near-Earth object does not constitute a nuclear weapons test. Nor is it necessarily military use, although the operation may be conducted by the military. Does a nuclear warhead that is intended to be used against asteroids constitute a weapon of mass destruction? Explosive devices are routinely used for peaceful, non-military and non-aggressive purposes. Even nuclear explosions have been considered for such purposes, for example in the US “Atoms for Peace”-Program. Therefore the use and the prepositioning of nuclear warheads for planetary defense may very well be legal under the current space law framework. It is not the aim of this presentation to prove or discuss the feasibility of such undertakings but to discuss the legality of using nuclear warheads for planetary defense purposes.