

MAR11-2010-020068

Abstract for an Invited Paper
for the MAR11 Meeting of
the American Physical Society

Physics in the Confrontation of Nuclear Weapons

JAMES TOEVS, James W. Toevs Consulting

Had the detonations on 9/11 involved nuclear explosives rather than jet fuel the number of deaths and the costs would have been multiplied by 100 or 1,000. This talk will briefly describe the nuclear threat and then focus on the technologies, both extant and evolving, for the detection and interdiction of clandestine trafficking of nuclear weapons and nuclear and radiological material. The methods vary from passive detection of heat, gamma radiation, neutrons, or other signatures from nuclear material, through radiological approaches to examine contents of vehicles and cargo containers, to active interrogation concepts that are under development. All of these methods have major physics components ranging from simple gamma ray detection as learned in a senior undergraduate lab to the latest ideas in muon production and acceleration.