

Expert: Asteroid would explode like a thermonuclear weapon

Jim Schenke, Purdue University

If the asteroid rapidly approaching us this week were to impact rather than nearly miss Earth, it would explode with a four-megaton force near what the military calls optimum height for damage.

This asteroid would release only half the energy of the Siberian strike in 1917 that leveled thick forest for 20 miles in every direction. But the 30,000-foot detonation height would cause significant property damage and loss of life, especially if the asteroid were to explode over a metropolis like New York or Chicago, according to Jay Melosh, a distinguished professor of earth, atmospheric and planetary sciences and physics and aerospace engineering at Purdue University.

"We're talking about an airburst with the power of a mid-size thermonuclear weapon, with similar results," Melosh says. "The worst damage would be directly beneath the explosion but windows and wood buildings 15 miles out would be imperiled."

On Friday (Feb. 15) the 50-m-wide asteroid DA14 will pass within 17,000 miles of Earth, closer than a typical communications satellite.

Melosh modeled a hypothetical impact with Impact:Earth!, the interactive website he created that is used for disaster planning purposes by safety officials from agencies that include the Federal Emergency Management Agency and Department of Homeland Security. Melosh can explain the astrophysics of the approaching asteroid and demonstrate the Impact:Earth! software, which easily lets even lay users adjust scenarios to account for variables such as speed, mass, direction, asteroid material content and detonation surface. He can also talk about technology that might divert an incoming asteroid.

Melosh is an internationally renown impact crater expert who has worked with NASA science teams to determine if Martian moons reveal evidence of microbial life, how the moon was formed from core to crust and how an asteroid strike may have prompted prehistoric mass extinction on Earth.

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