

U.S. Navy hypersonic railgun

The U.S. Navy is planning to deploy an electromagnetic railgun weapon that can fire projectiles farther and faster than any previous gun. Prototype launchers, built by BAE Systems, are expected to be delivered in 2014

Ship-based railgun could be fully operational by 2020

Projectile weight
18kg

Barrel length
10m

USS Zumwalt
Stealth warship designed with all-electric power system. Able to channel energy to weapons such as railgun

Turret mount

Power supply

■ **Muzzle velocity:** 2.5km per second (Mach 7.5) – almost twice as fast as conventional guns

■ **Range:** Target 400km away could be hit in six minutes. Conventional guns have maximum range of 80km

■ **Projectile:** Destroys target by kinetic force, eliminating need for explosive warhead

HOW RAILGUNS WORK

Positive rail

Armature

Negative rail

Projectile

Electric current

2 Electrical pulse passes through rails, creating opposing magnetic fields

Current creates third magnetic field in armature, which is repulsed by fields in rails and forced out of barrel with projectile

1 Projectile placed between two conductive rails. Armature placed behind projectile, bridging gap between rails

Magnetic field along axis of rail