

Navy EM Railgun

EM analysis

Rail & armature materials

MHD physics at armature-to-rail interface

Inbore diagnostics



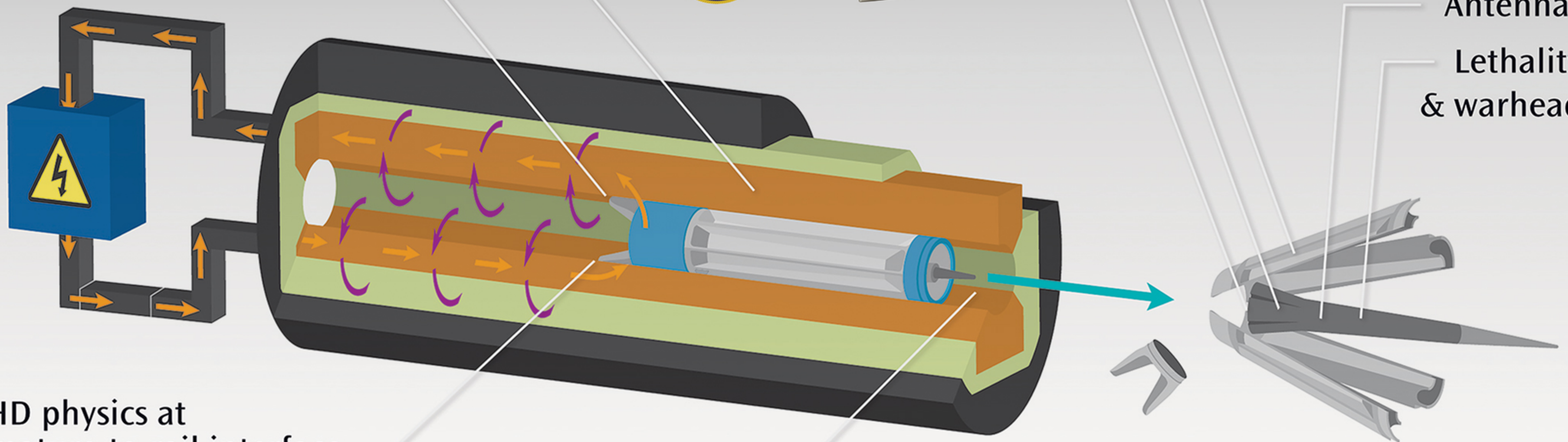
Navigation, guidance & control

Aerothermal heating

Launch package design

Antennas

Lethality & warhead



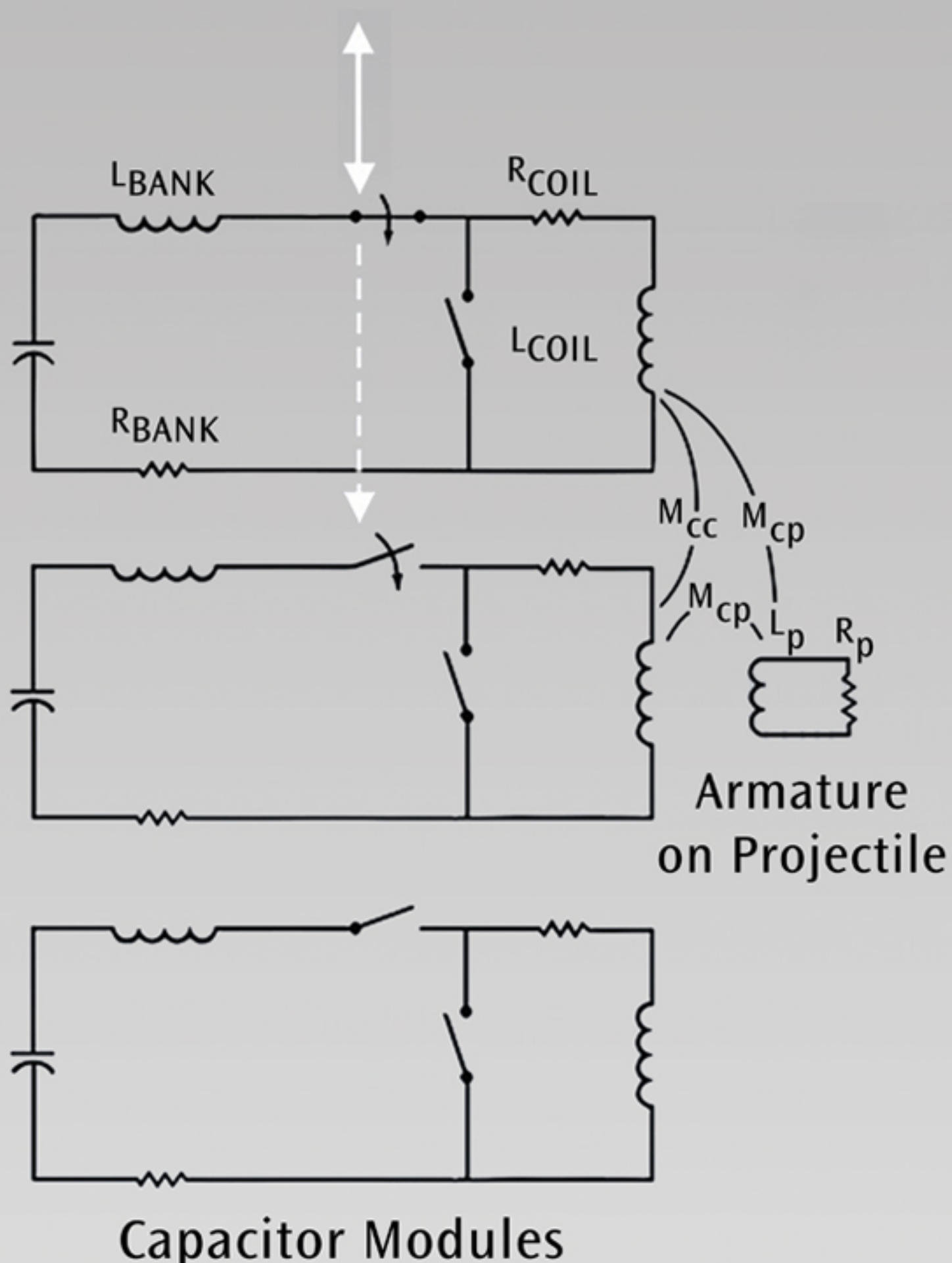
Navy Hyper-Velocity Projectile

ELECTROMAGNETIC LAUNCH

ADDRESSING DIFFICULT CHALLENGES FOR EM GUNS AND PROJECTILES

Sandia 120 mm Pulsed Induction Coilgun for Kinetic and Non-Kinetic Missions

Gun Firing Control $\begin{matrix} z(t) \\ V(t) \end{matrix}$ 94 GHz Radar

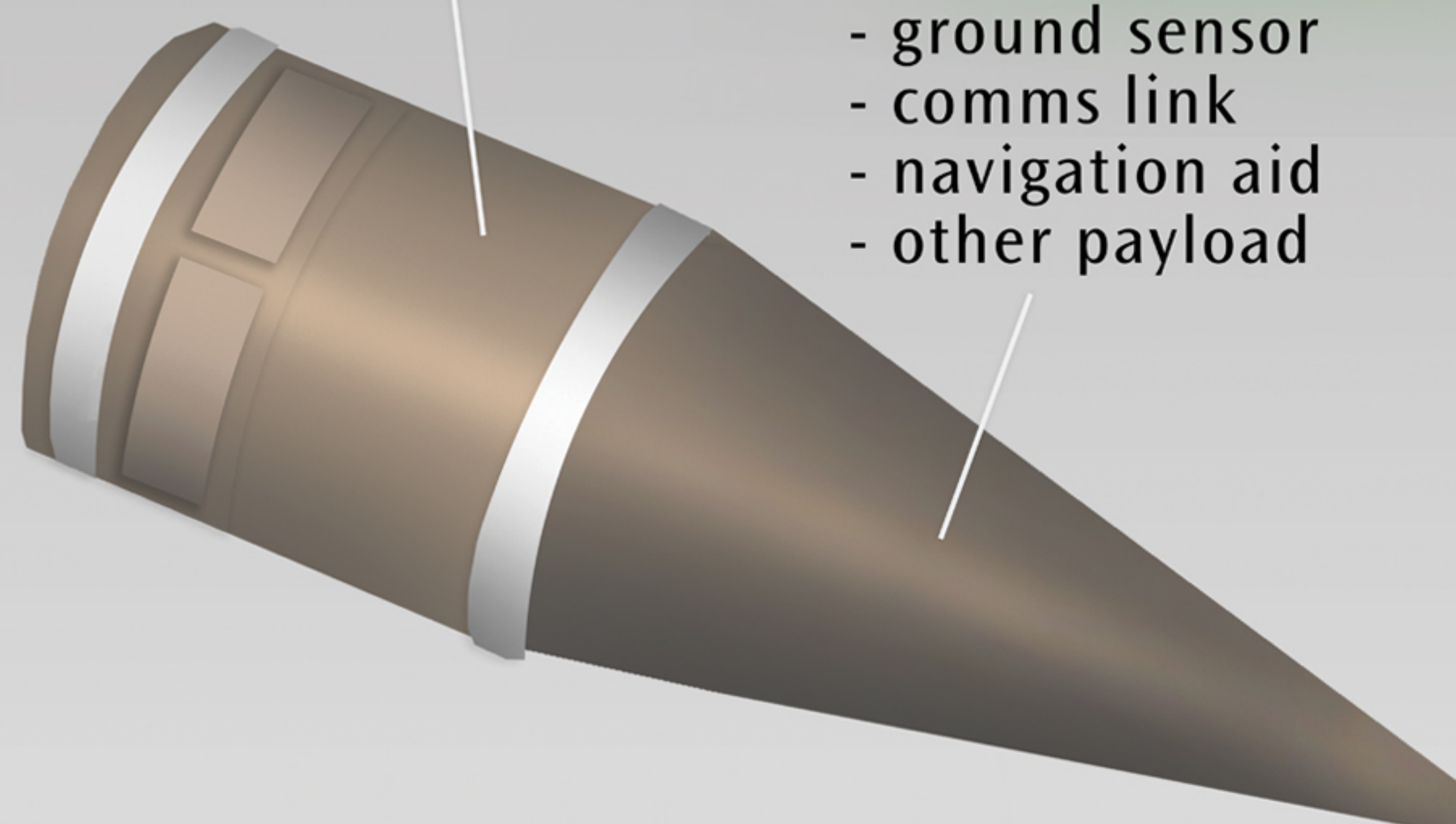


NG&C within armature section

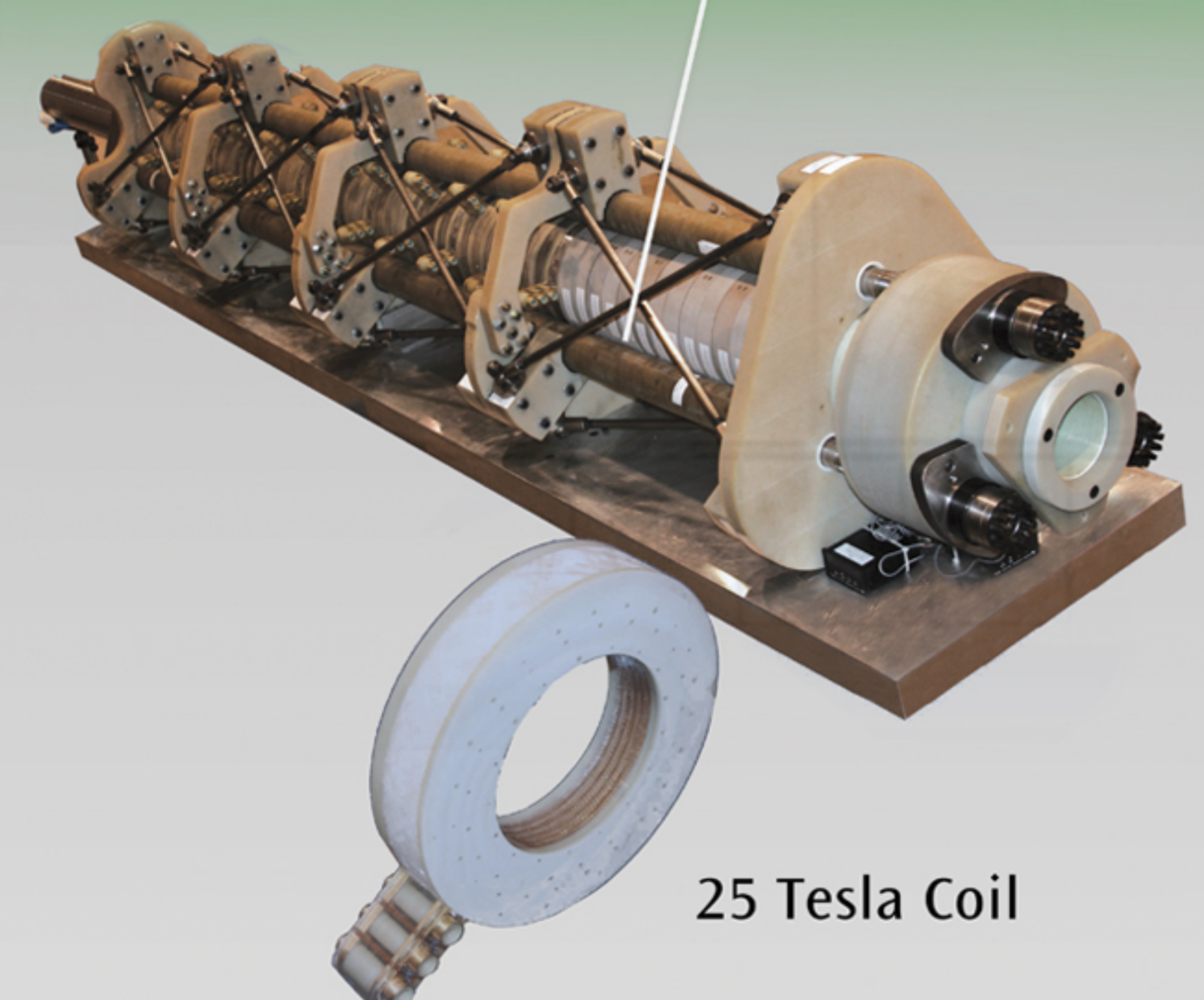
Kinetic warhead or
- ground sensor
- comms link
- navigation aid
- other payload

Weapon and Non-weapon Payloads

Armature on Projectile Coils Forming Barrel



Notional projectile for coilgun

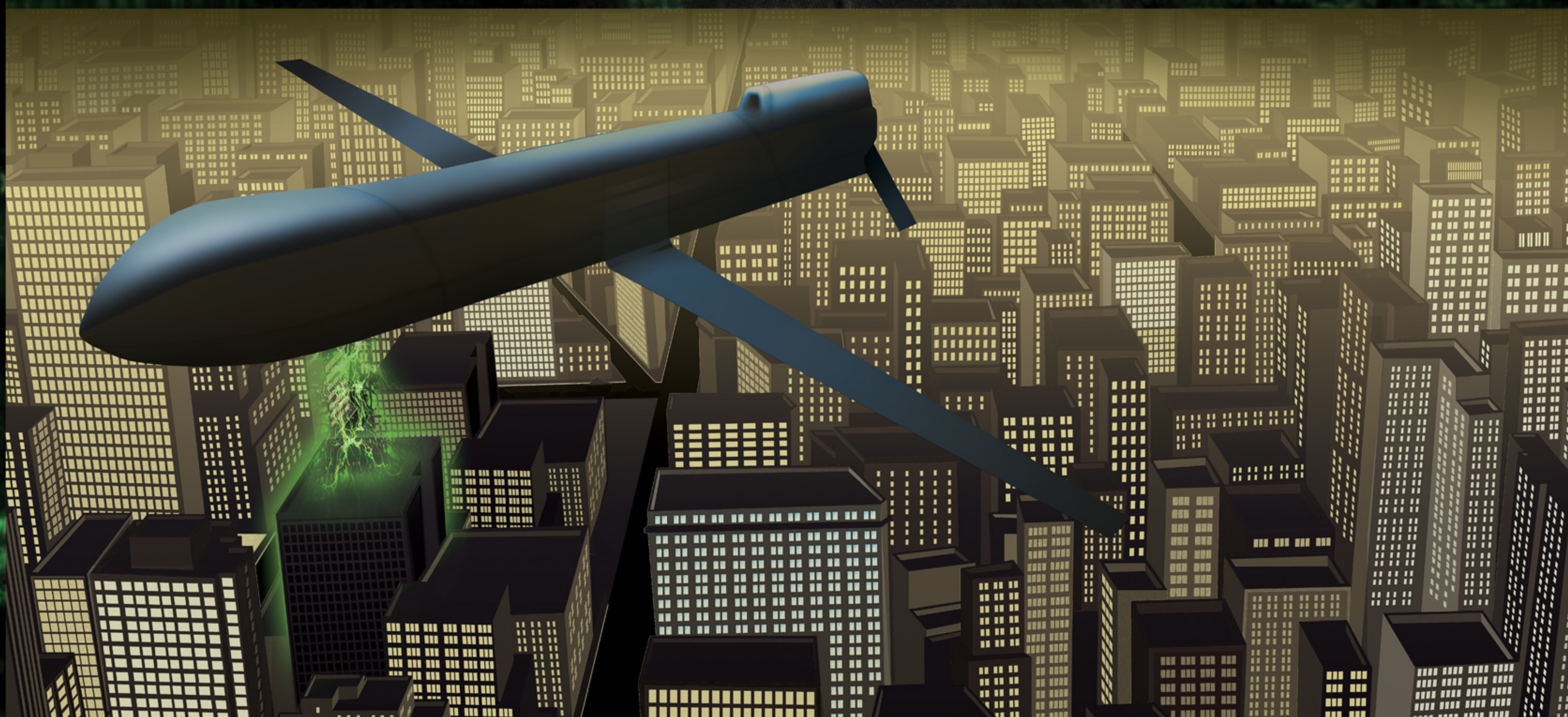


MILITARY SYSTEMS & TECHNOLOGIES
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CONFRONTING NATIONAL SECURITY NEEDS WITH DIRECTED ENERGY SOLUTIONS

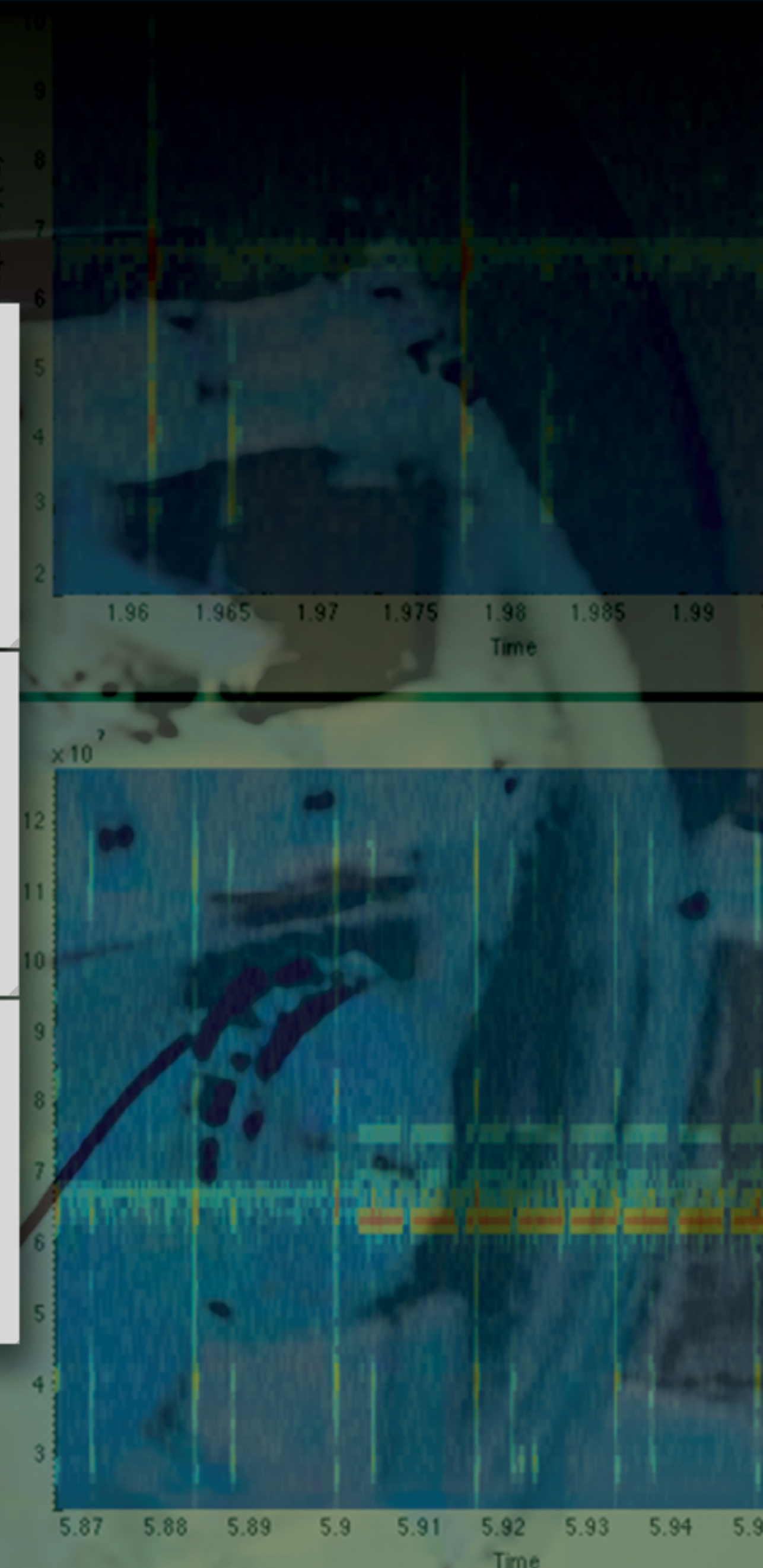
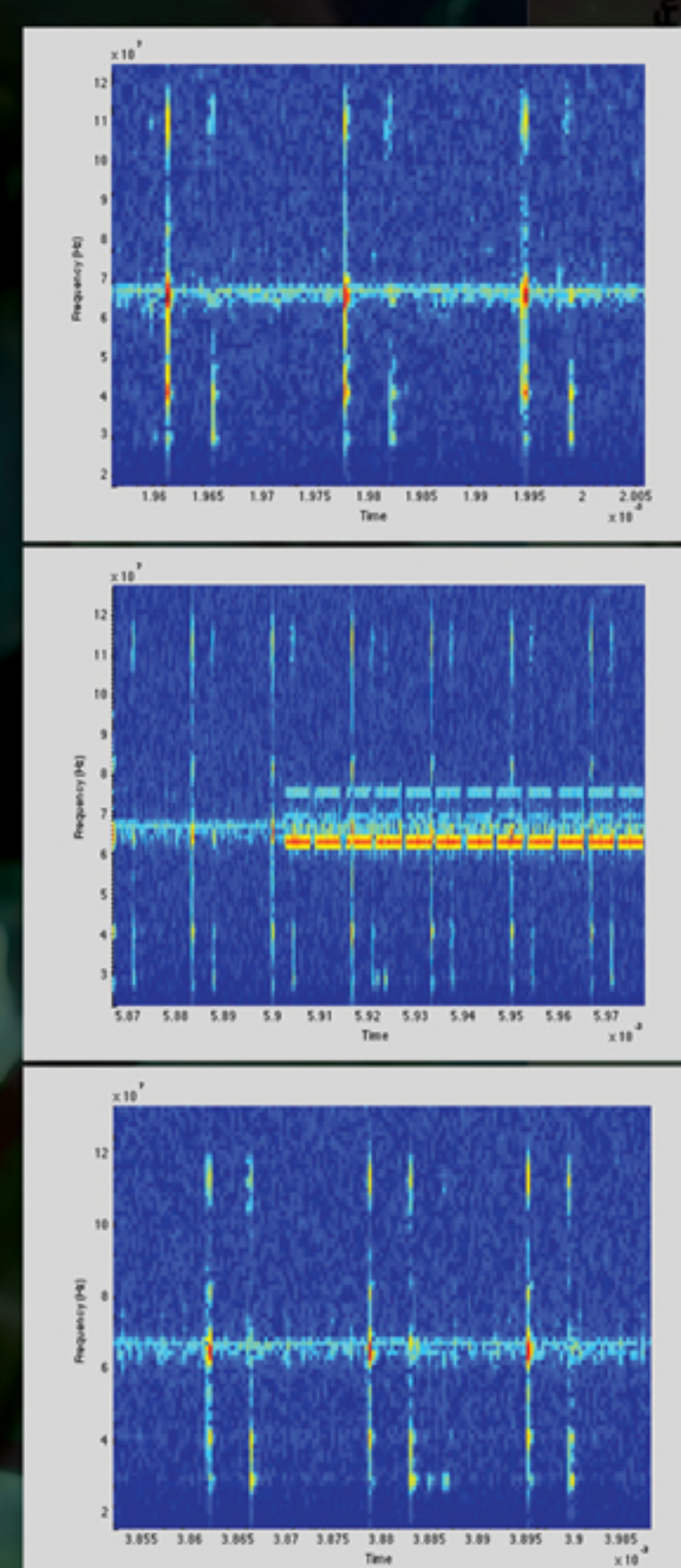
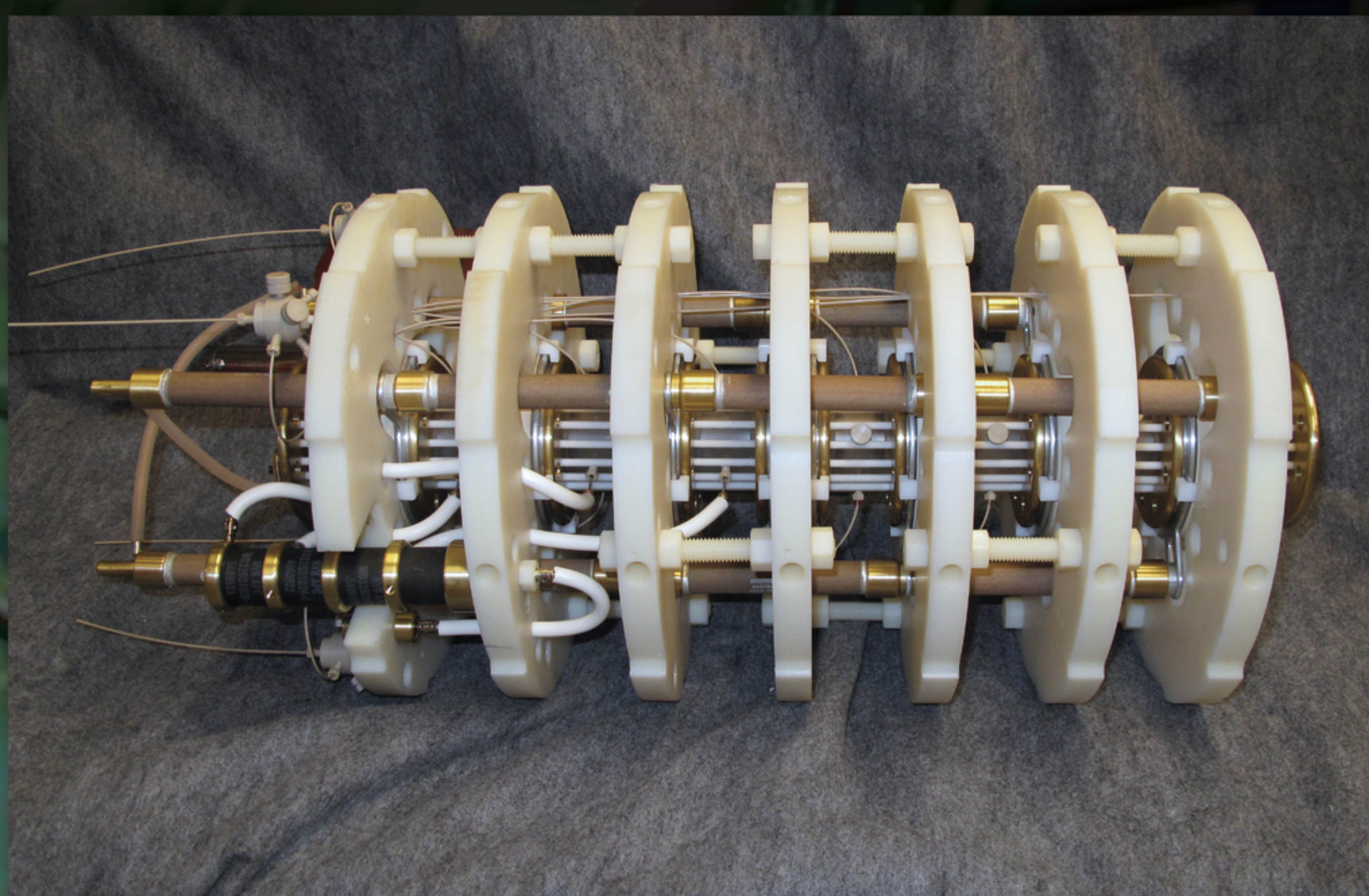


HPEM-RF

Source Development
Platform Integration
Target Effects Testing

eBDA/I
Compact Pulsed Power
Propagation Modeling

HPEM/Cyber
Antenna Design
RF Effects Modeling



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DIRECTED ENERGY LASER APPLICATIONS

CONFRONTING NATIONAL SECURITY CHALLENGES WITH PULSED LASER,
NONLINEAR OPTICAL, AND HIGH-VOLTAGE TECHNOLOGY SOLUTIONS



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