Spherically Imploding Plasma Liners as a Standoff Magneto-Inertial-Fusion Driver
Los Alamos National Laboratory & HyperV Technologies Corp.

Project Overview
LANL, HyperV, U. Alabama Huntsville, U. New Mexico, Tech-X, BNL, HyperJet Fusion (via Strong Atomics)
- Demonstrate plasma-gun technological readiness
- Characterize discrete jet merging (benchmark models)
- Perform spherical plasma liner demonstration using 36 plasma jets

Key Insights and Innovations
- Achieved plasma-gun performance objectives and demonstrated operation of 7 guns with <2% mass variation across jets
- Experimentally assessed and benchmarked models of Mach-number degradation and liner non-uniformities due to jet merging

Accomplishments and ARPA-E Impact
- 1st-gen plasma gun operational w/3500 multi-gun shots (2–7 guns)
- Numerical models benchmarked
- 2nd-gen gun upgrades for 36-gun $4\pi$ experiment nearly complete
- Enable continued development of a low-cost, high-shot-rate driver

Future Plans
- Demonstrate $4\pi$ spherically imploding plasma liner in 2019
- Initiate $\beta>1$ target formation
- Optimize plasma liner with additional guns
- Field integrated experiment with plasma liner compressing a target plasma
- Compress target to $>1$ keV with increased liner energy

Follow-on funding - Strong Atomics; 4 peer-reviewed publications (many more in prep.)