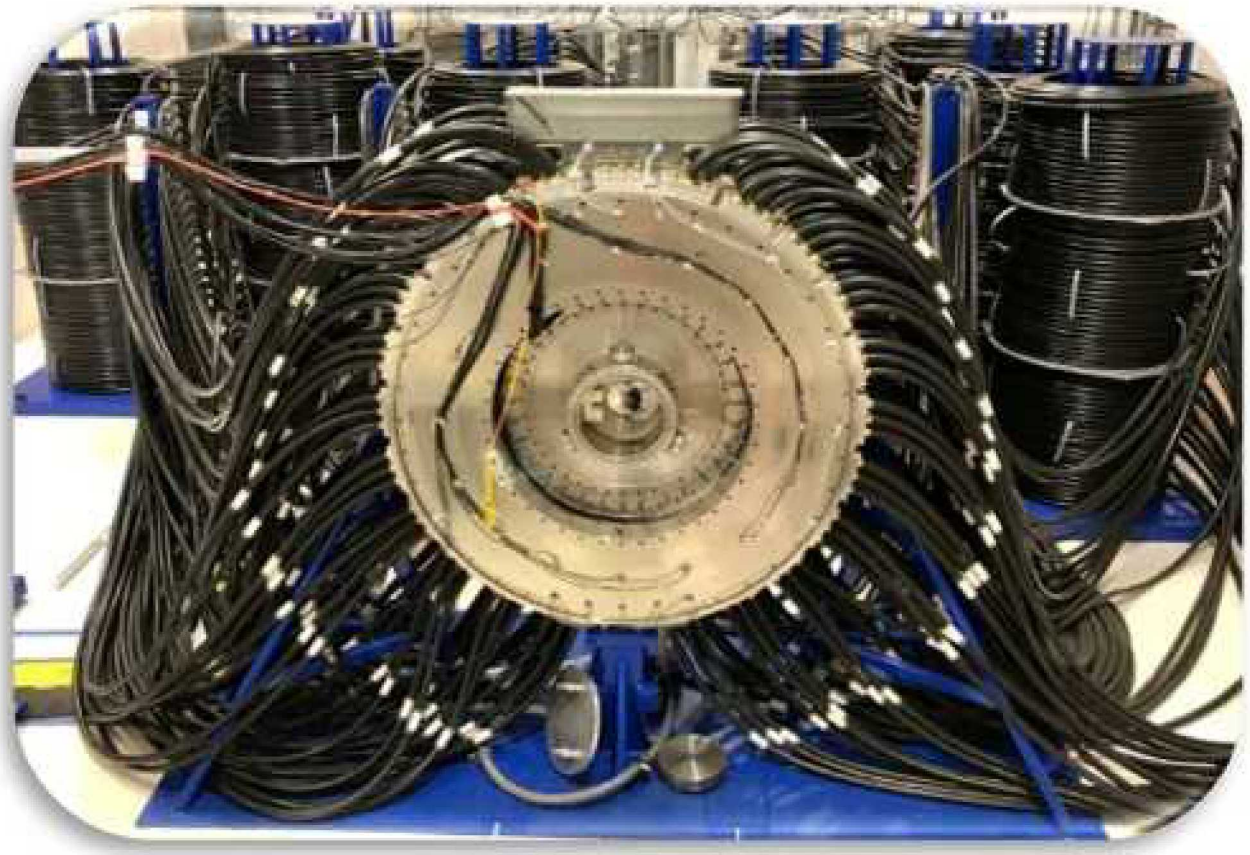
SAND2020-6688C

Thor machine workshop



Dan Dolan and John Benage

February 18, 2020

Albuquerque, NM

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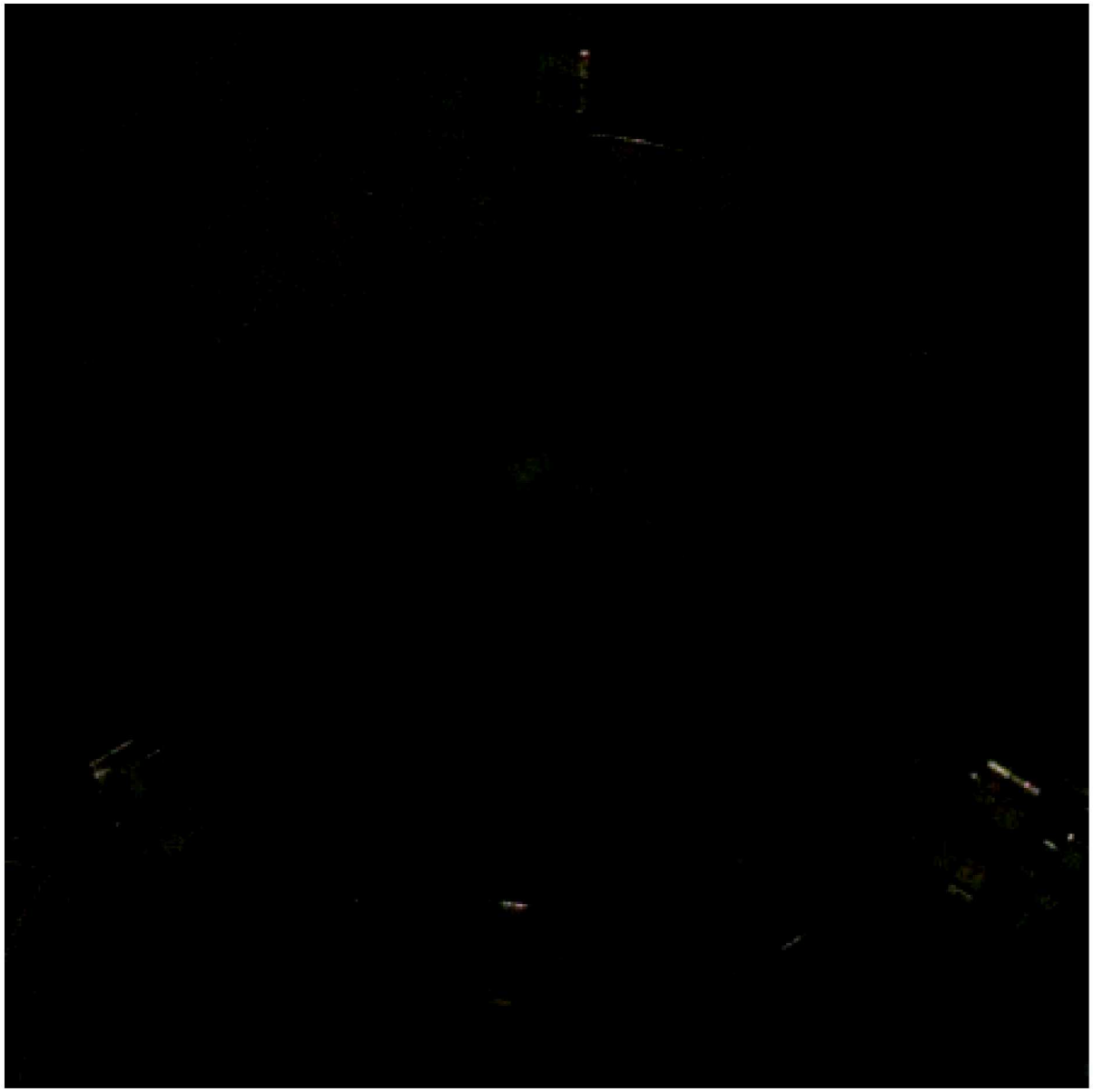
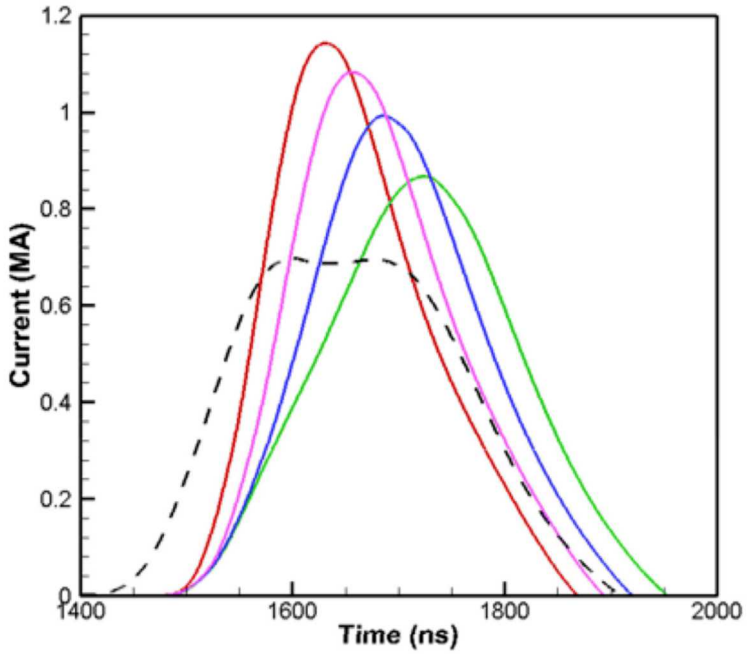
Thor is a <2.5 MA pulsed power machine

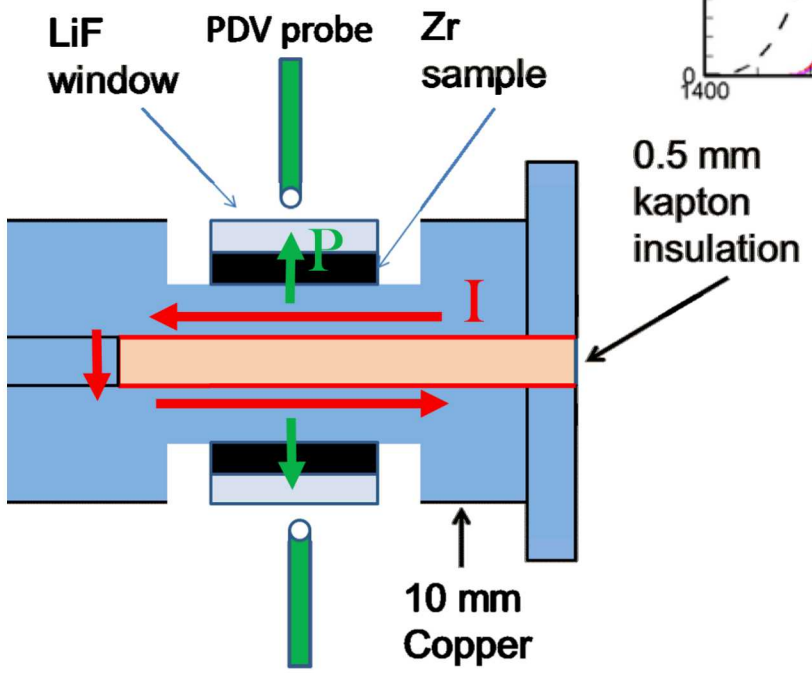
- Presently uses 64 bricks
  - Linear transformer drivers (LTDs), fired in eight groups
  - ~100 ns current pulses
  - Independent triggering
  - Tunable pulse shape
- Strip load geometry
  - Two panels per shot
  - 6-20 mm panel width
- Low cost
  - About $1 K per shot
  - Up to ~8 shots per day



Thor generates ramp-wave compression

- Similar to Veloce and Z strip line experiments
  - Peak stresses of 1-30+ GPa (size dependent)
- Highly tunable pressure drives
  - Ramp-hold
  - Ramp-hold-ramp
  - Ramp-release
  - Shock-ramp?





Goals for today

- Discuss Thor as it exists today
  - Capabilities
  - Current and near-term projects
- Gather potential uses and needs
  - Stress and sample size requirements
  - Diagnostics
  - Heating, etc.
- Planning for the future
  - Expanded operations
  - Upgrade paths

Tentative agenda

Time	Subject	Speaker
9:00 AM	Introduction	Dan/John
9:20 AM	Pulse shaping	Justin Brown
9:40 AM	Kinetics modelling	Jon Belof
10:00 AM	Stress uniformity	Jean-Paul Davis
10:20 AM	AM materials	Paul Specht
10:40 AM	Break	
11:00 AM	Conductivity measurements	Andy Porwitzky
11:20 AM	X-ray diffraction	Tommy Ao
11:40 AM	Supporting capabilities	Dan Dolan
12:00 PM	Lunch on your own	
1:15 PM	Comparison with Z	Andy Porwitzky
1:30 PM	Upgrade options	Brian Stoltzfus
2:15 PM	Break	
2:35 PM	Discussion of future needs	
4:00 PM	Adjourn	

Today is very informal. Feel free to ask questions and discuss relevant topics not listed here.