Cornell Center for Pulse Power Driven High Energy Density Plasma Physics

Major Experimental Facilities
Pulsed Power Machines

- **COBRA**: 1MA, 100-200 nsec current pulse
  - Liner experiments
  - Gas Puff Z-Pinch Experiments
  - Plasma Jet Experiments
  - Reconnection Experiments

- **XP**: 450KA, 50 nsec current pulse
  - X-Pinch Development
  - Spectroscopy development
  - X-Ray absorption studies

- **LC Pulser**: 10-15 kA, 50-400 ns LC times
  - Spectroscopy development
COBRA

100-200 nsec pulse
1.1-0.9 MA
0.5 Ohm

Our largest Pulsed Power Generator
Used for Gas Puff, Cylindrical Liners and Radial Foils/Plasma Jets Experiments
Exploratory Experiments on Magnetic Reconnection, and Shock Studies
XP-System

400 KA, 50 nsec, 0.5 Ohm

Used for Diagnostic Development, X-Ray Absorption, X-Ray Thomson Scattering and X-Pinch Configurations
LC Pulser

25 KV -> 10-15 KA
0.2 μF Capacitor
Adjustable Inductance
50-400 nsec

Used for Single Wire Studies and as a Test Bed for Spectroscopy
New Equipment

• 10 J Laser for Thomson Scattering in operation
• PLIF System for neutral density measurements of the gas puff valve
• Triggered main switches for better COBRA timing-under development
• Independent X-Pinch pulser-under development
Major Diagnostics for COBRA

10 J, 3 nsec 527 nm Laser For Thomson Scattering

PLIF System for Gas Puff Neutral Density Measurements, Spectrometer and Optical Streak Camera
Machine Shop

- 2 Computer controlled milling machines
- 1 Computer controlled lathe
- A high precision lathe and a gap bed lathe
- Soldering and Welding equipment
- Vacuum potting station
- Vapor deposition station
Shop Area

Computer Controlled Lathe, 2 Computer Controlled 3-D Milling Machines, High Precision Harden Lathe, Gap Bed Lathe (for large pieces) and Welding/Soldering Area.

For In-House Fabrication of Items Like Gas Puff Nozzles, Pulsed Power Parts and Experimental Hardware.