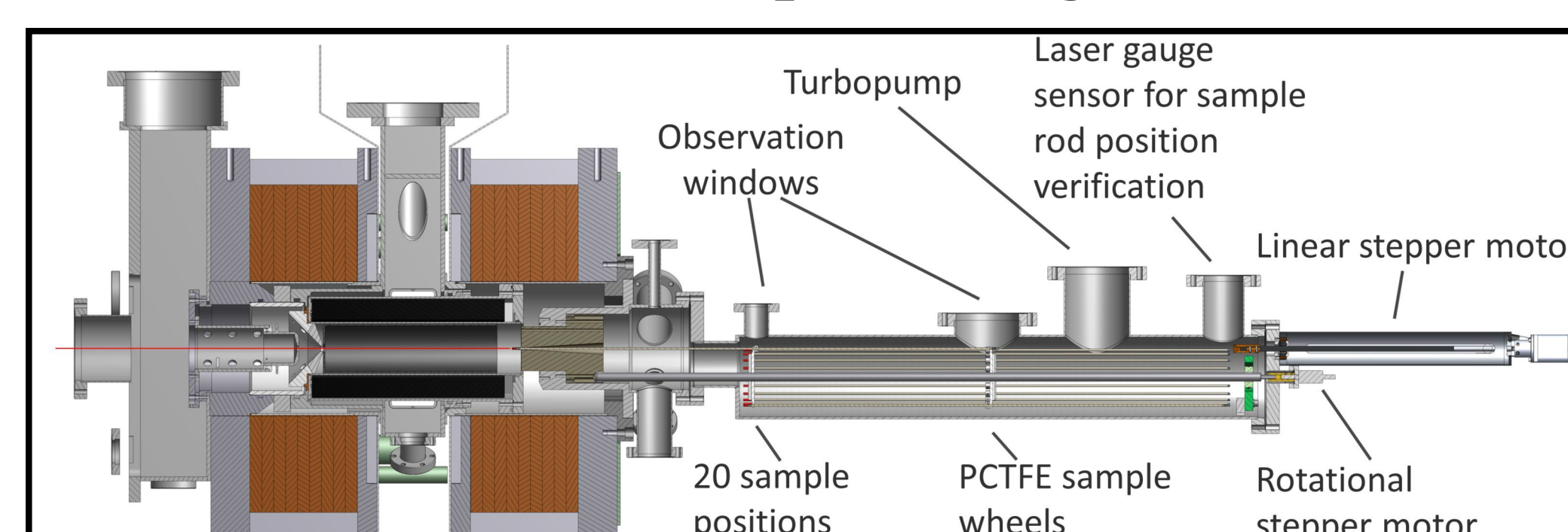


Abstract

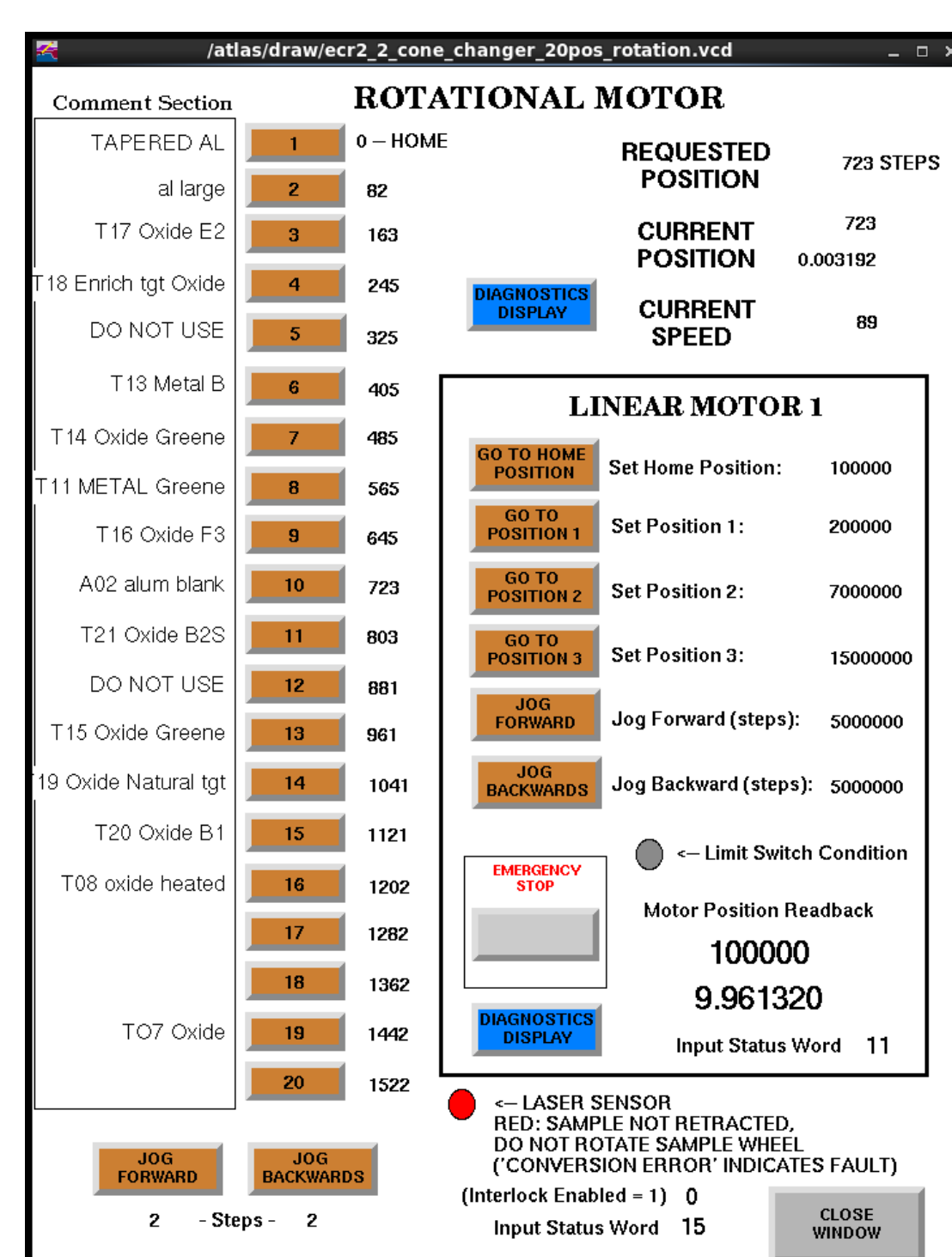
The AMS (Accelerator Mass Spectrometry) project at ATLAS (Argonne Tandem Linac Accelerator System) complements the MANTRA (Measurement of Actinides Neutron TRANsmutation) experimental campaign. To improve the precision and accuracy of AMS measurements at ATLAS, a new overall control system for AMS measurements needs to be implemented to reduce systematic errors arising from changes in transmission and ion source operation. The system will automatically and rapidly switch between different m/q settings, acquire the appropriate data and move on to the next setting. In addition to controlling the new multi-sample changer and laser ablation system, a master control program will communicate via the network to integrate the ATLAS accelerator control system, FMA control computer, and the data acquisition system.

ECR Source

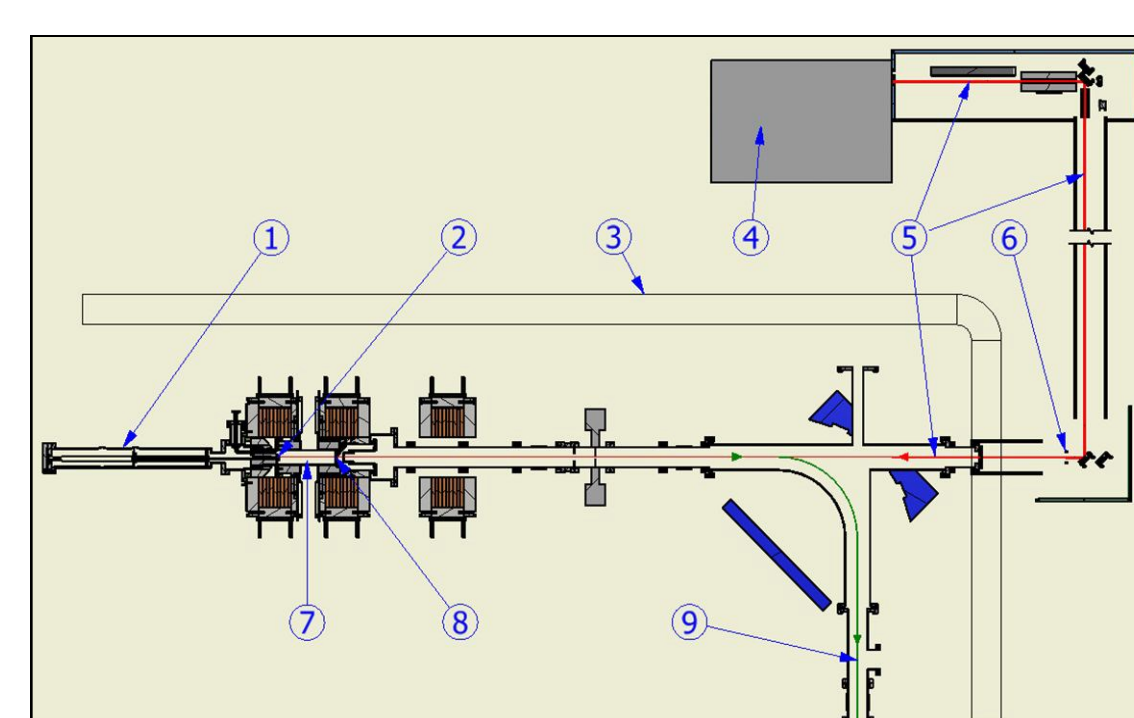
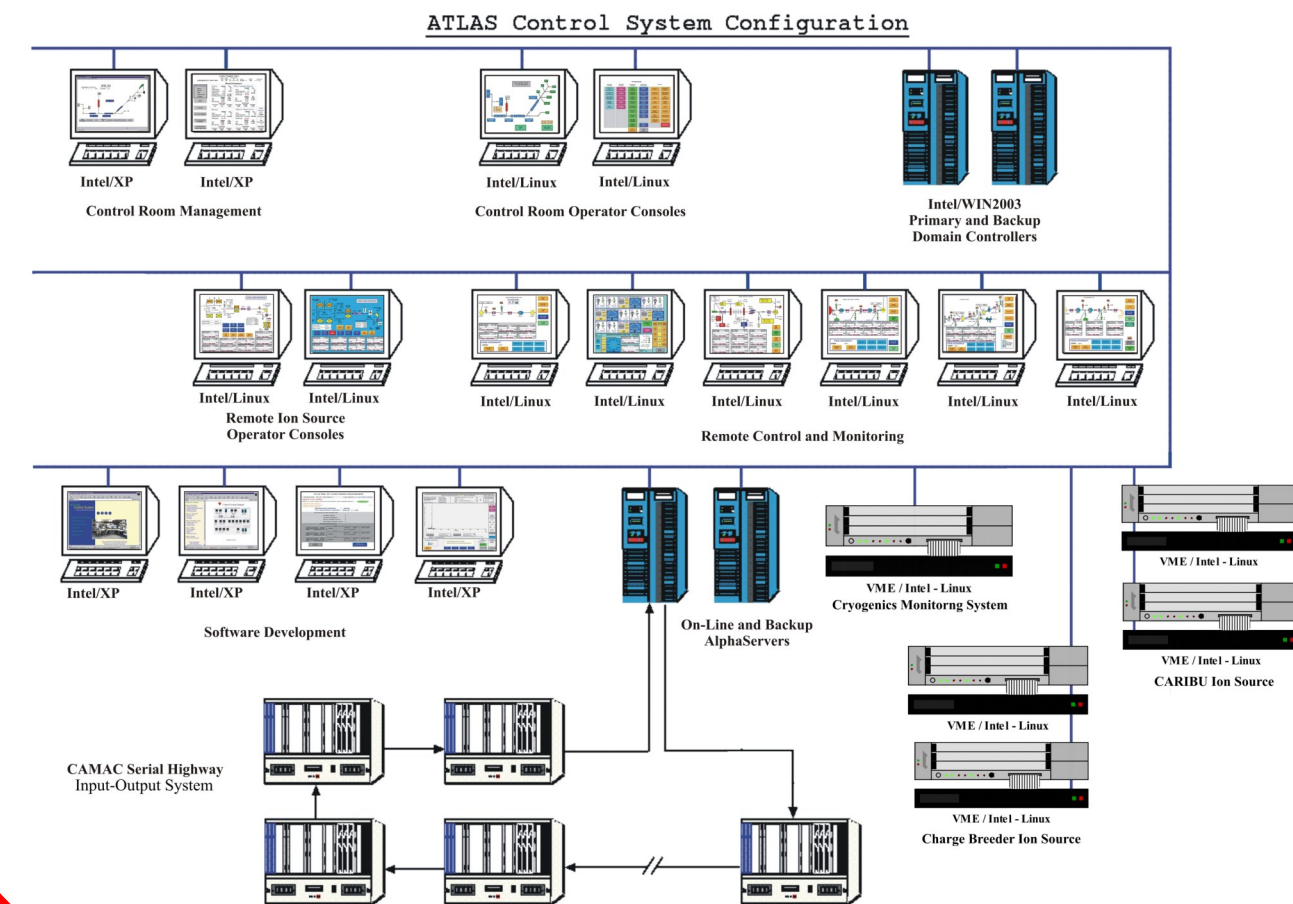
Multi-sample Changer



The multi-sample changer allows the system to automatically change between up to 20 different samples within the source. First, the linear stepper motor retracts the sample from the chamber. Next, the rotational stepper motor moves the requested sample to the insertion point. Finally, the linear stepper motor inserts the sample into place.



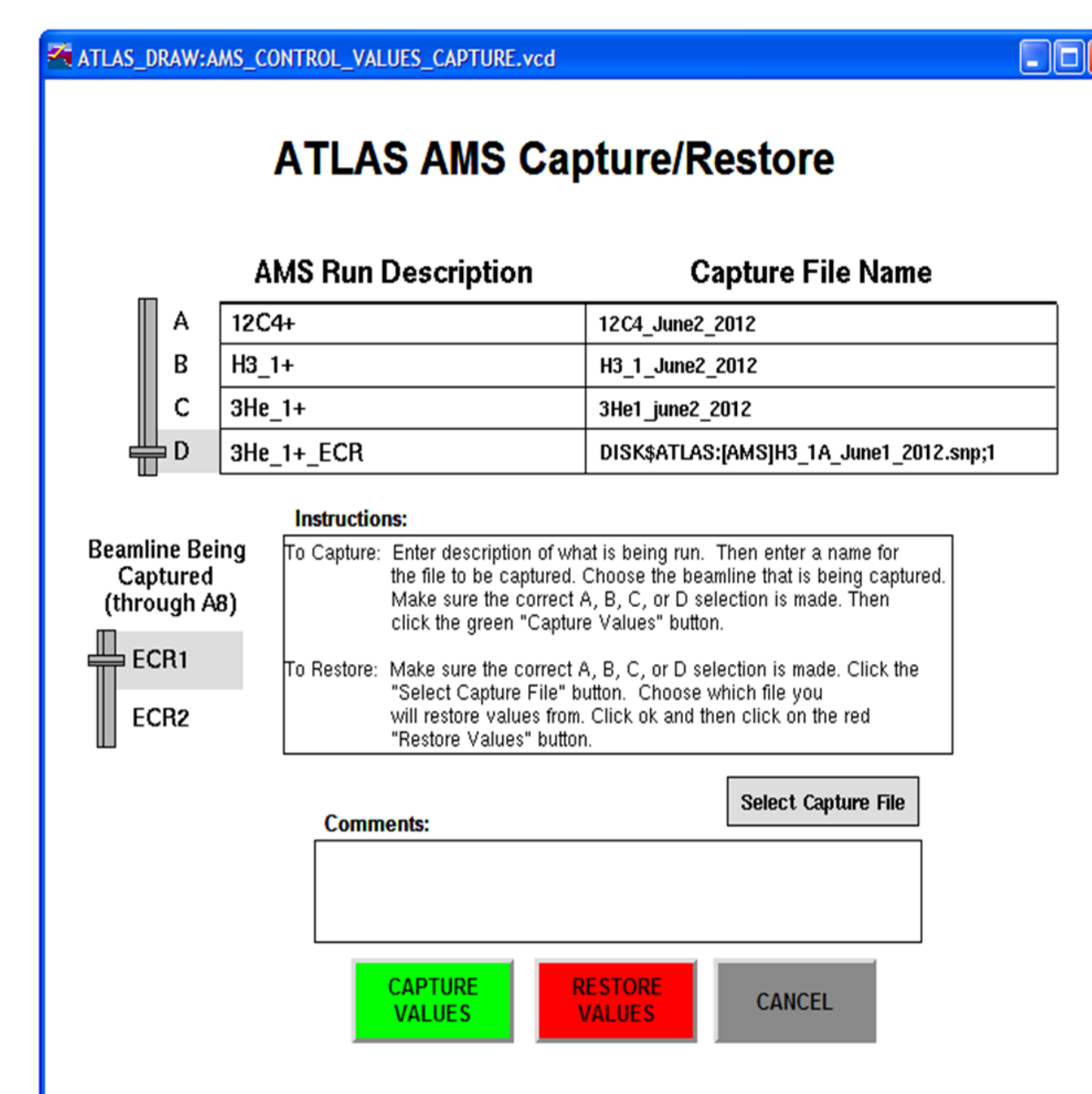
ATLAS Control System



Installation of the laser ablation system at the ECR2 ion source.

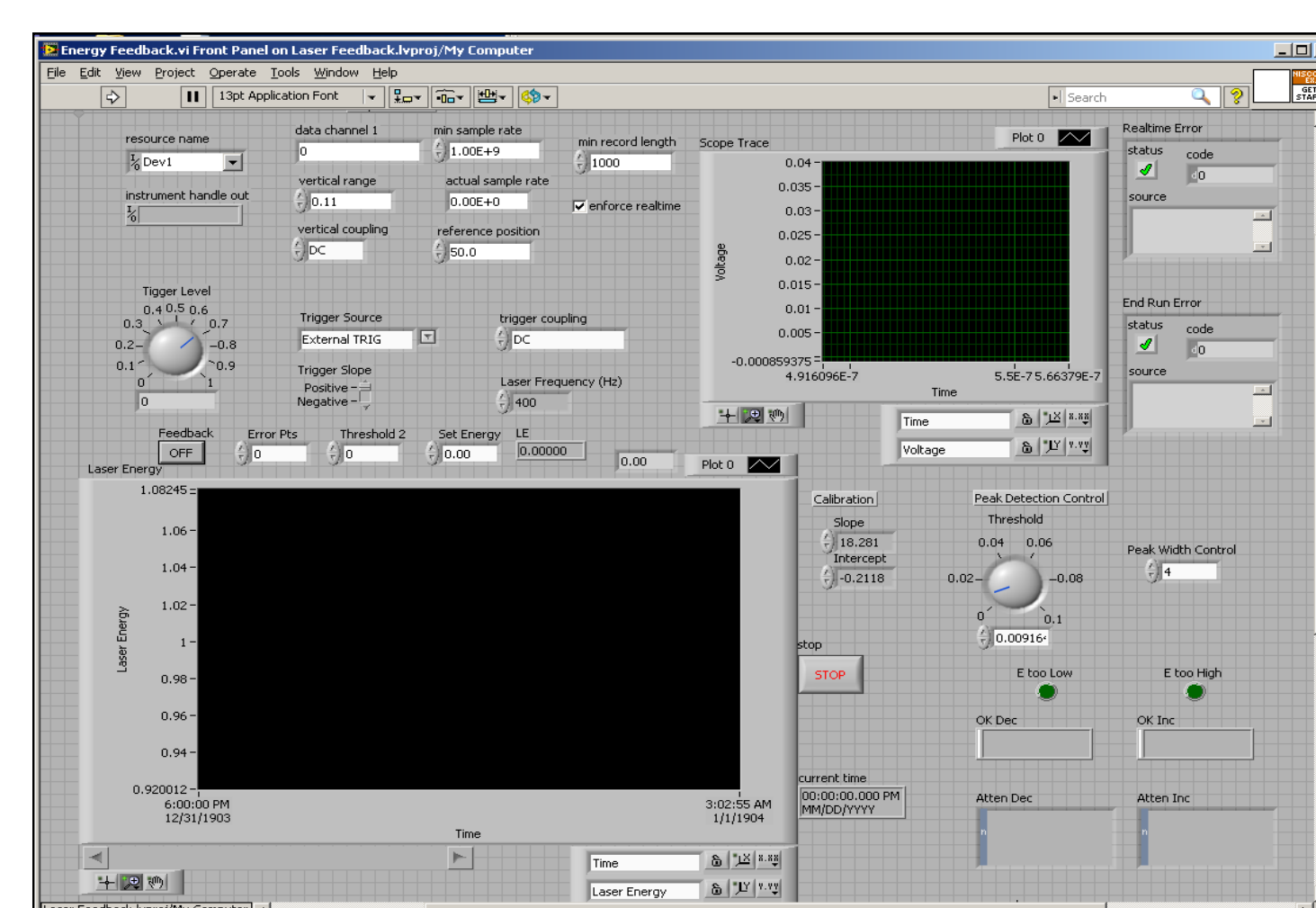
- 1: sample changer chamber
- 2: sample ablation position
- 3: high voltage platform
- 4: laser power supplies
- 5: laser path
- 6: wobbler mirror
- 7: plasma chamber
- 8: extraction aperture
- 9: ion beam path

Capture/Restore Settings System



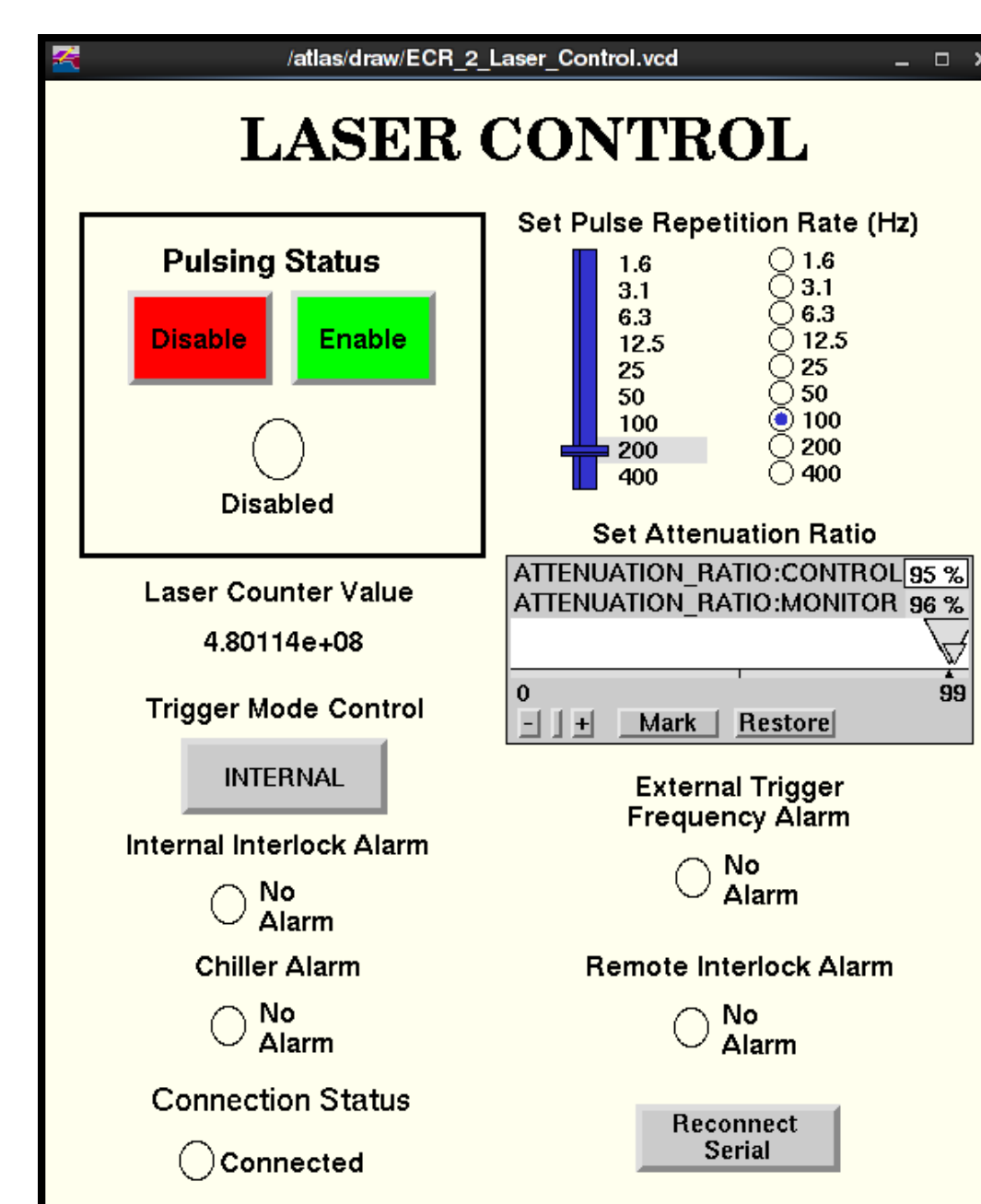
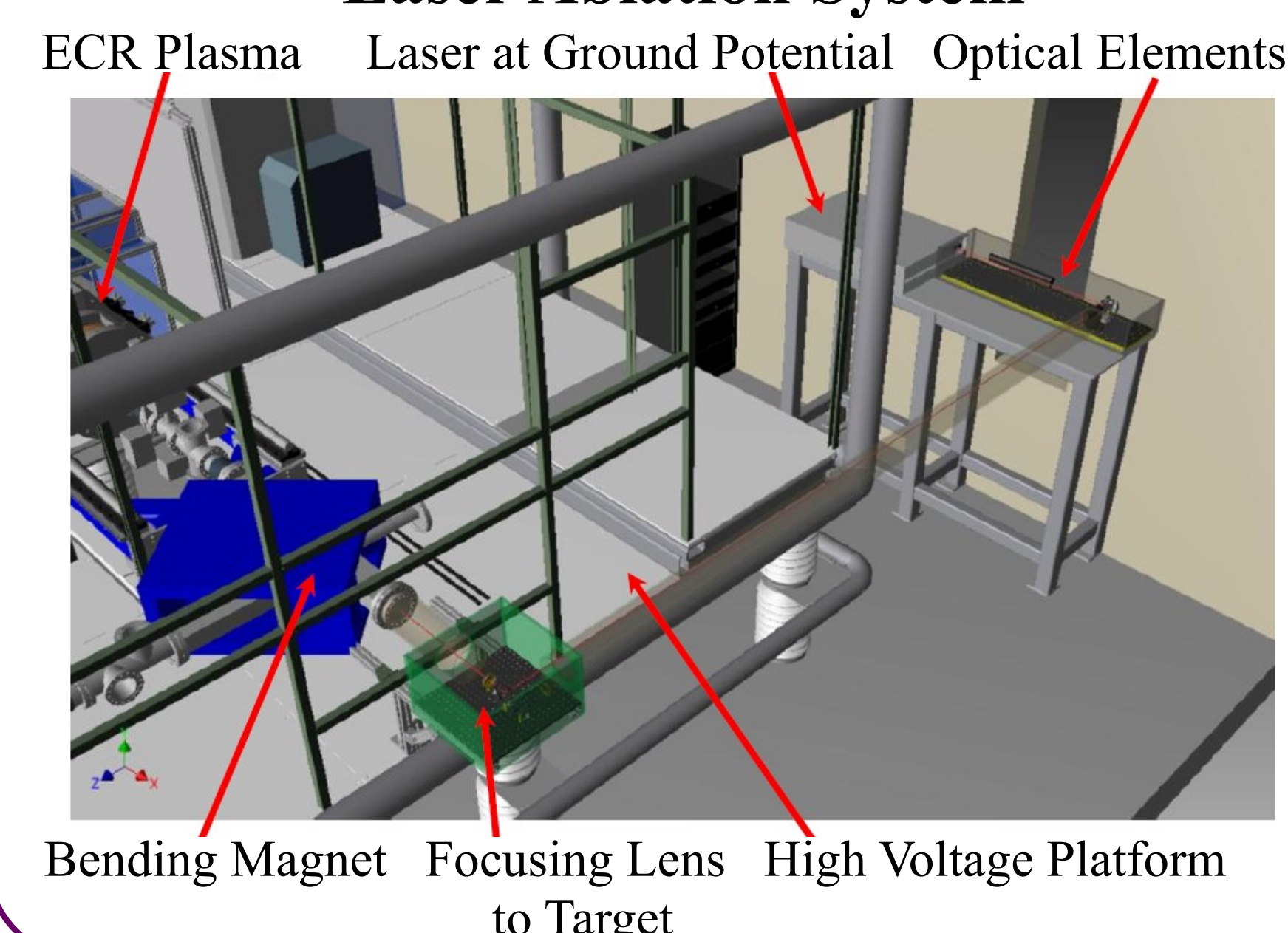
The capture/restore utility allows the experimenter/operator to save up to capture control settings for the beamline and restore them back quickly and accurately. The Master Control Program restores these saved settings automatically and after taking data, records

Laser Ablation Energy System

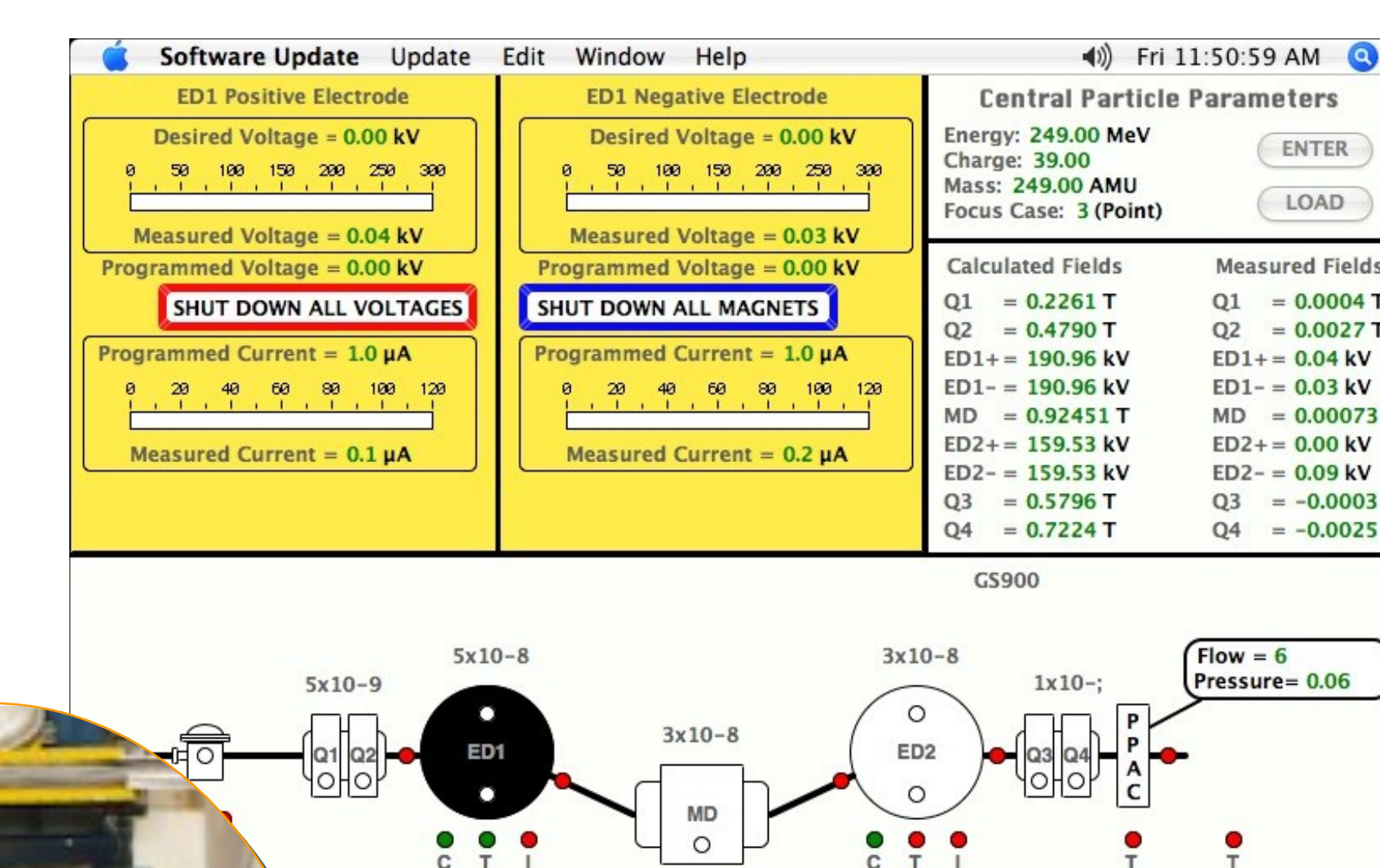


Windows System running LabView samples the laser energy and compares it with a setpoint and communicates to the Master Control Program to adjust Laser Attenuation accordingly.

Laser Ablation System



FMA



Data Acquisition System



Serial Communication

Data Acquisition Network

Master Control Program

Multi-threaded Linux TCP Socket Server accepts and sends various commands to the multiple systems via a script to coordinate the changing of the beam settings for various source samples and m/q settings.

```
# Sample Script
f1: insertcup fcp303
a1:begin
insertcup fcp303
changecone 3
implement Sm151.snp
end
wait -t 20 d1
r1:readcur fca802
wait -t 20 d2
#FMA SETUP
```