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## Automation upgrade of the CXLS photoinjector

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The automation upgrade of the photoinjector for the Compact X-Ray Light Source (CXLS) at Arizona State University is described. As the accelerator vault of the CXLS is only 10 meters long, the photoinjector drive laser is located in an enclosure inside the vault. Since ionizing radiation is present in this room during operations, it necessitates remote control of all devices used to optimize the laser spot. This includes multiple shutters, Galil motors, picomotors, a mirror flipper, LEDs, and remote lens controllers. To actuate these devices, a GUI was created with the use of MATLAB AppDesigner which communicates with the hardware through EPICS (Experimental Physics and Industrial Control System). Challenges with this GUI are described, along with the team's efforts to finalize the control software. After these upgrades, the photoinjector laser characteristics can be adjusted remotely during operation and changes to the drive laser's position, shape, and intensity can be made without interrupting beam time.

### Footnotes

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