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## GUI control system for the Mu2e electrostatic septum high voltage at Fermilab

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The Mu2e Experiment has stringent beam structure requirements; namely, its proton bunches with a time structure of  $1.7\mu\text{s}$  in the Fermilab Delivery Ring. This beam structure will be delivered using the Fermilab 8-GeV Booster, the 8-GeV Recycler Ring, and the Delivery Ring. The  $1.7\text{-}\mu\text{s}$  period of the Delivery Ring will generate the required beam structure by means of a third order resonant extraction system operating on a single circulating bunch.

The electrostatic septum (ESS) for this system is particularly challenging, requiring mechanical precision in a ultra high vacuum of  $1\text{E-}8\text{Torr}$  to generate  $100\text{kV}$  across  $15\text{mm}$ . This paper describes a graphical user interface that has been developed to automate the conditioning and commissioning process for the electrostatic septa. It is based on an interface to the Fermilab ACNET system using the ACSys Python Data Pool Manager (DPM) Client produced and maintained by Fermilab Accelerator Controls.

Network interfacing between data pool managers made by the application and ACNET devices introduce an inherent (approximately  $1\text{s}$ ) latency in throughput of the readouts. This delay is utilized to process and graph incoming data events of devices crucial to conditioning of a electrostatic septum (ESS). Ramping' and Monitoring' modes adjust settings of the power supply based on internal logic to efficaciously increase and maintain the high voltage (HV) in the ESS, easing the voltage setting on incidence of sparking or other possibly damaging events. A timestamped log file is produced as the application runs.

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### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

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