

# Update on ProtoDUNE DB

## ProtoDUNE HD Slow Controls DB Status and Plans

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**IOWA**



# Abstract proposal for CHEP2024

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Dear DUNE computing,

Please see the proposed abstract for CHEP 2024 regarding ProtoDUNE Run Conditions Database.

It's a poster contribution to CHEP 2024 from me and Ana Paula.

Poster abstract:

## ProtoDUNE Run Conditions Database

The DUNE experiment will produce vast amounts of metadata, which describe the data coming from the read-out of the primary DUNE detectors. Various databases will collect the metadata from different sources. The conditions data, which is the subset of all the metadata that is accessed during the offline reconstruction and analysis, will be stored in a dedicated database. ProtoDUNE at CERN is the largest DUNE far detector prototype, and as such serves to prove database solutions and schemas for DUNE.

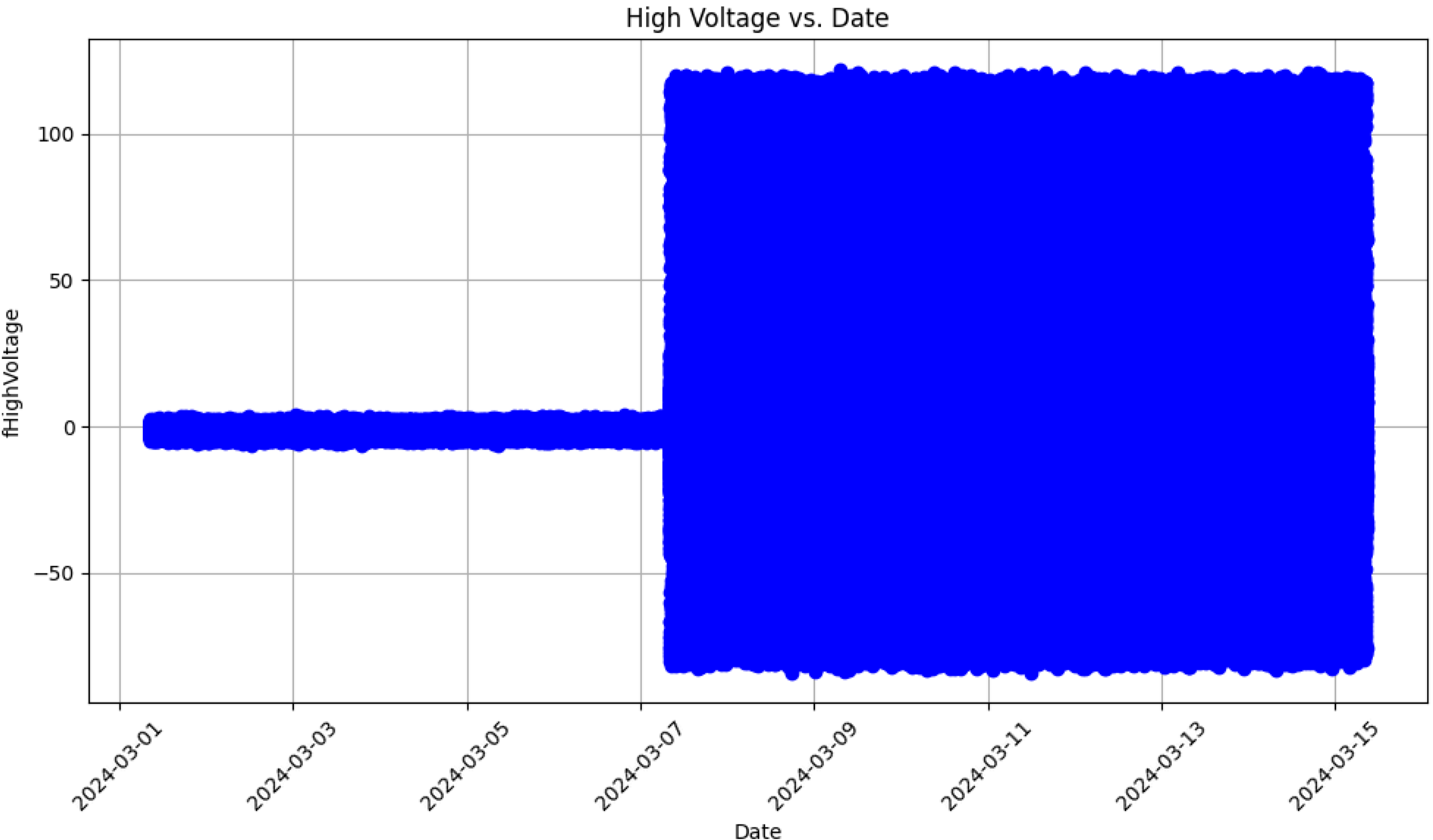
The ProtoDUNE Run Conditions Database is a PostgreSQL relational database that stores the conditions metadata coming from sources such as: DAQ, Slow Control, and Beam databases. This contribution will summarize the Run Conditions Database infrastructure which consists of a python rest API users' interface, a C++ interface, an Art interface (which is the framework used for the offline LArTPC data processing), and a plug in to the new data catalog (MetaCat). We will present how the conditions data, coming from the slow controls database, is retrieved, studied, and stored in a convenient format.

All the best,  
Nilay & Ana Paula

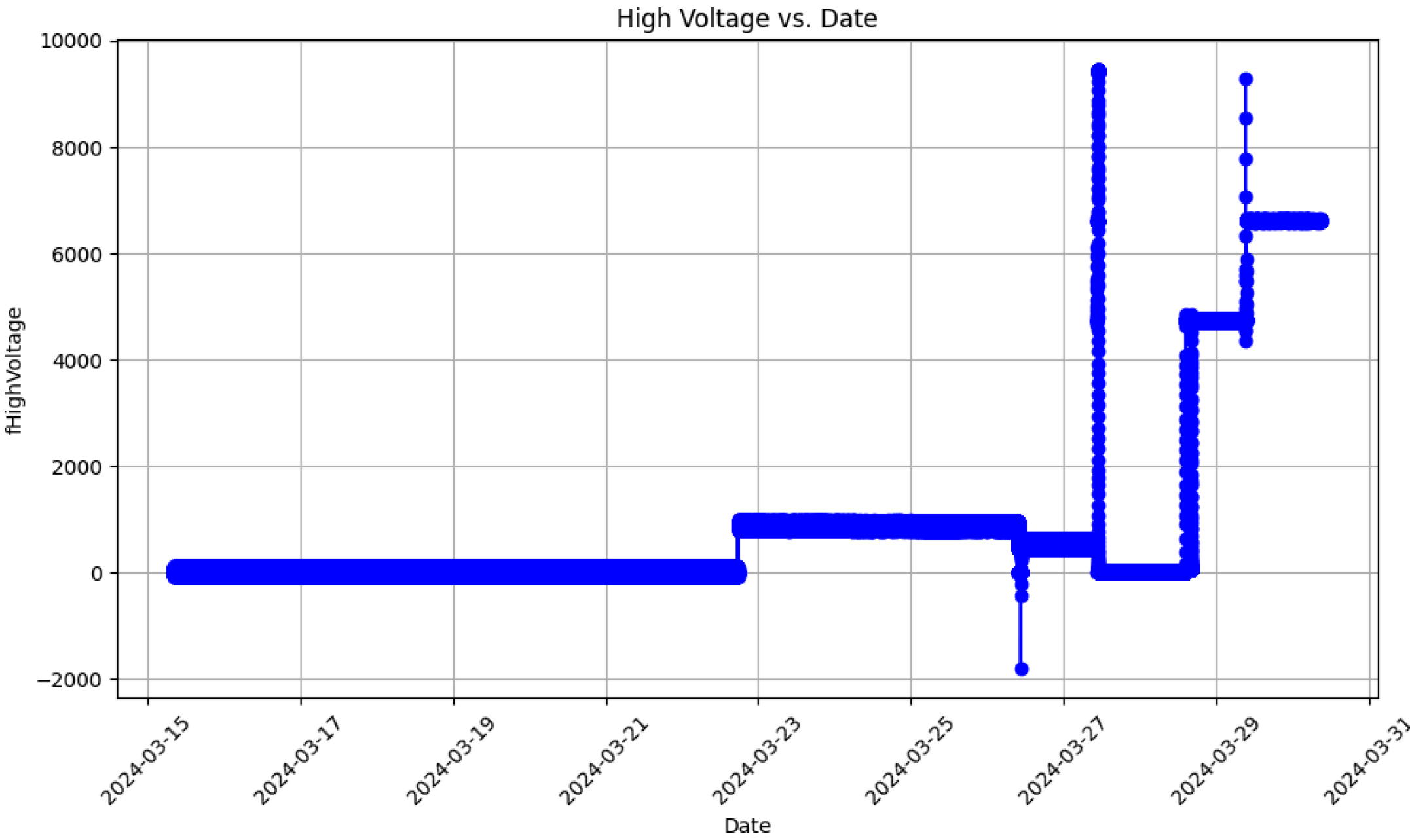
***It was approved by the DUNE computing consortium,  
I just submitted to the conference page me as a presenter, Ana Paula as a co-author***

# High Voltage - TimeStamp histograms Month: March

Sensor id:name(s) in DCS-DB: "48002299330842" : "NP04\_DCS\_01:Heinz\_V\_Cathode."



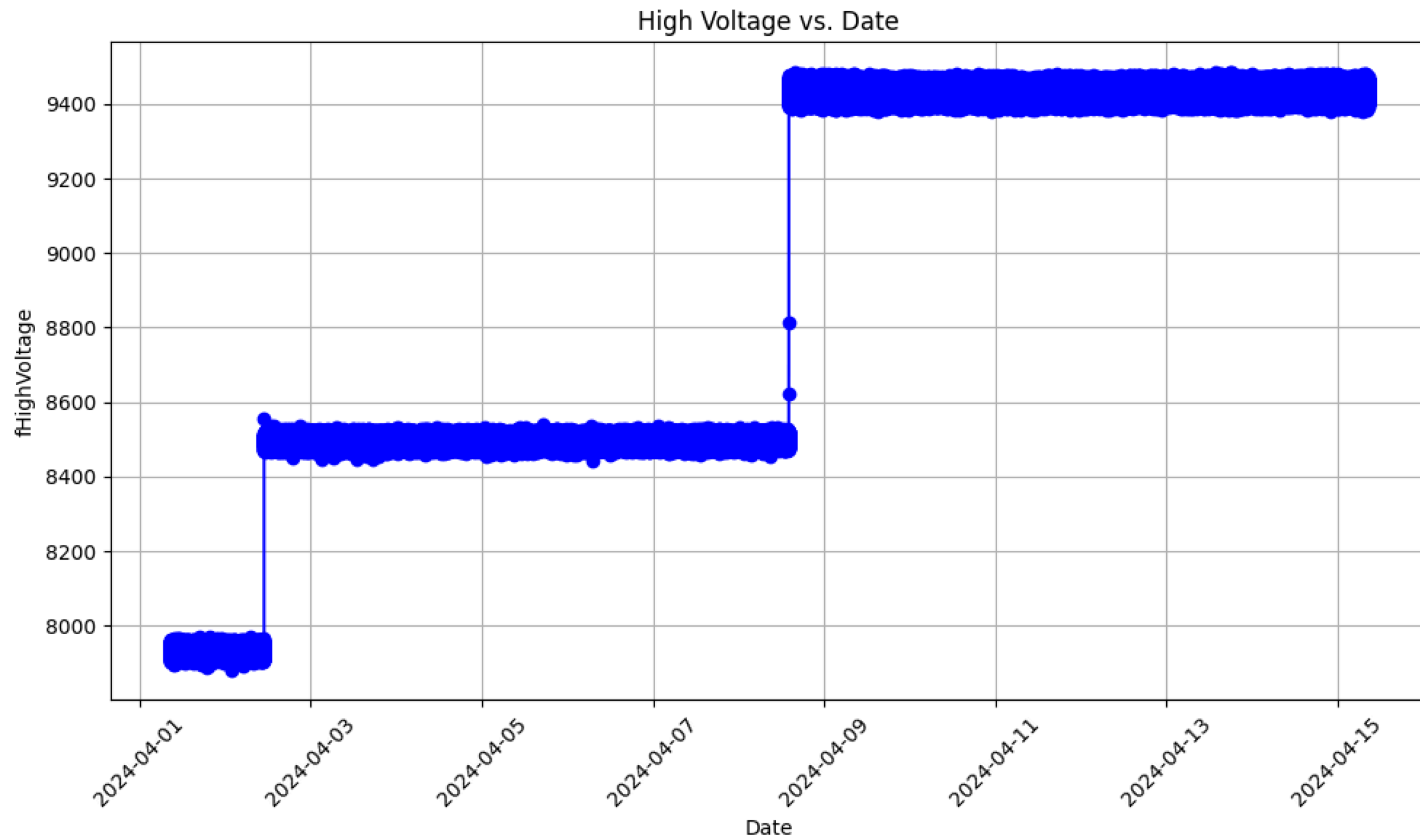
```
High Voltage Mean for the March1_15_2024: 0.6227155028989717
High Voltage Std for the March1_15_2024: 24.947378722963464
High Voltage Variance for March1_15_2024: 622.3717051469702
High Voltage Sum for the March1_15_2024: 346894.8797689244
```



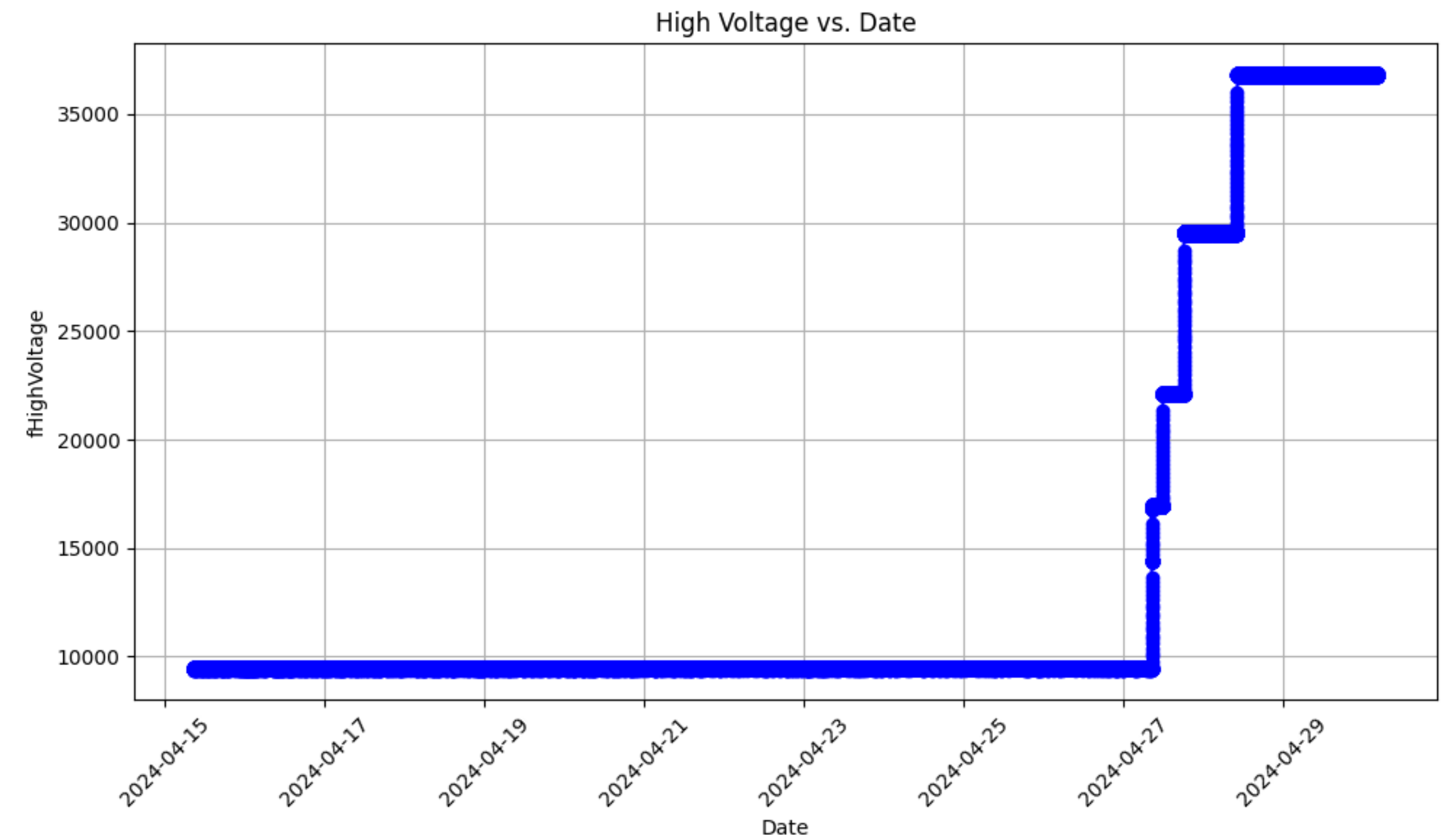
```
High Voltage Mean for the March15_30_2024: 929.2888793609571
High Voltage Std for the March15_30_2024: 1842.1265442645702
High Voltage Variance for March15_30_2024: 3393430.2050841274
High Voltage Sum for the March15_30_2024: 552740096.155018
```

# High Voltage - TimeStamp histograms Month: April

Sensor id:name(s) in DCS-DB: "48002299330842" : "NP04\_DCS\_01:Heinz\_V\_Cathode."



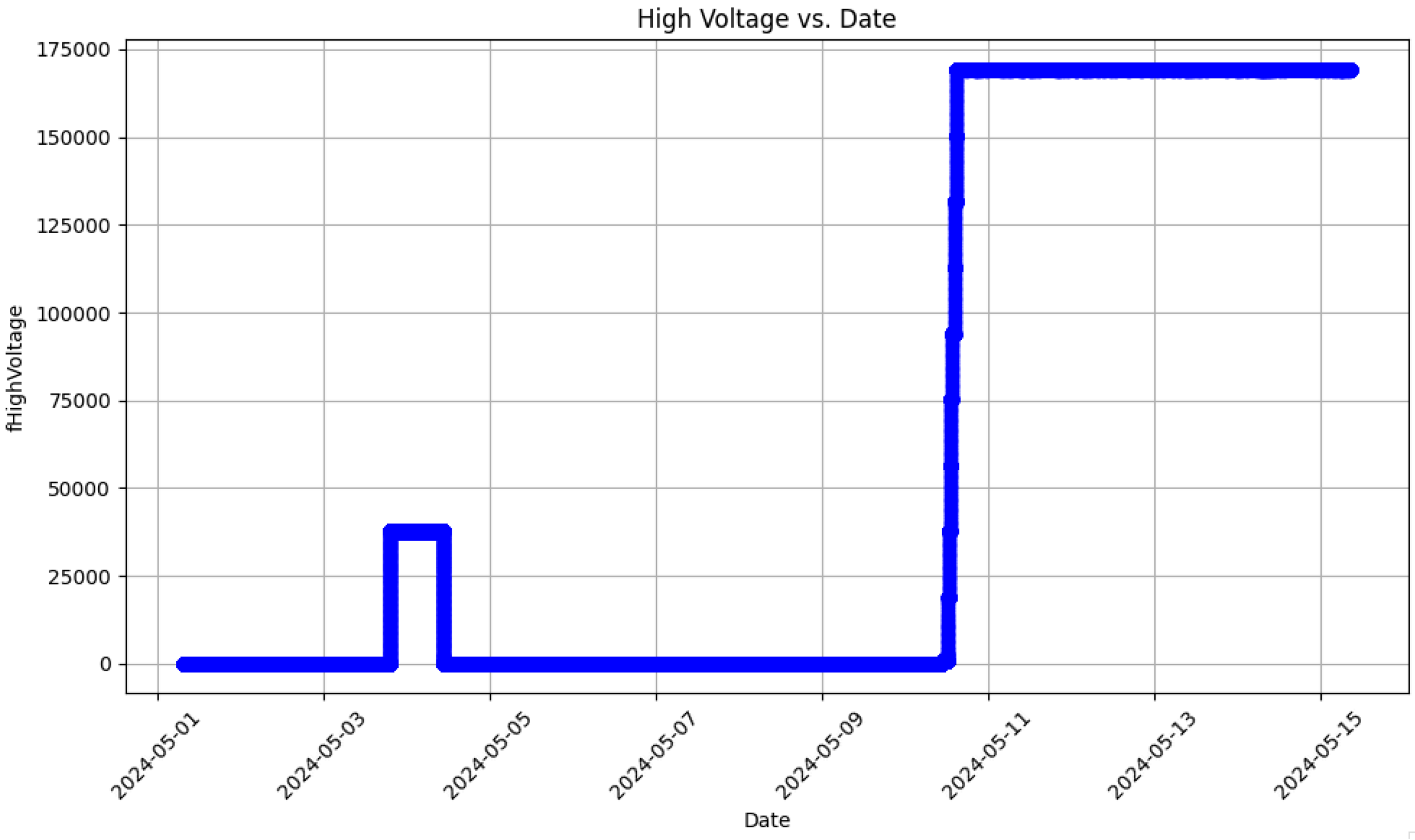
```
High Voltage Mean for the Apr1_Apr15_2024: 8904.564749616151
High Voltage Std for the Apr1_Apr15_2024: 530.7322502617509
High Voltage Variance for Apr1_Apr15_2024: 281676.72146790184
High Voltage Sum for the Apr1_Apr15_2024: 4950466058.85485
```



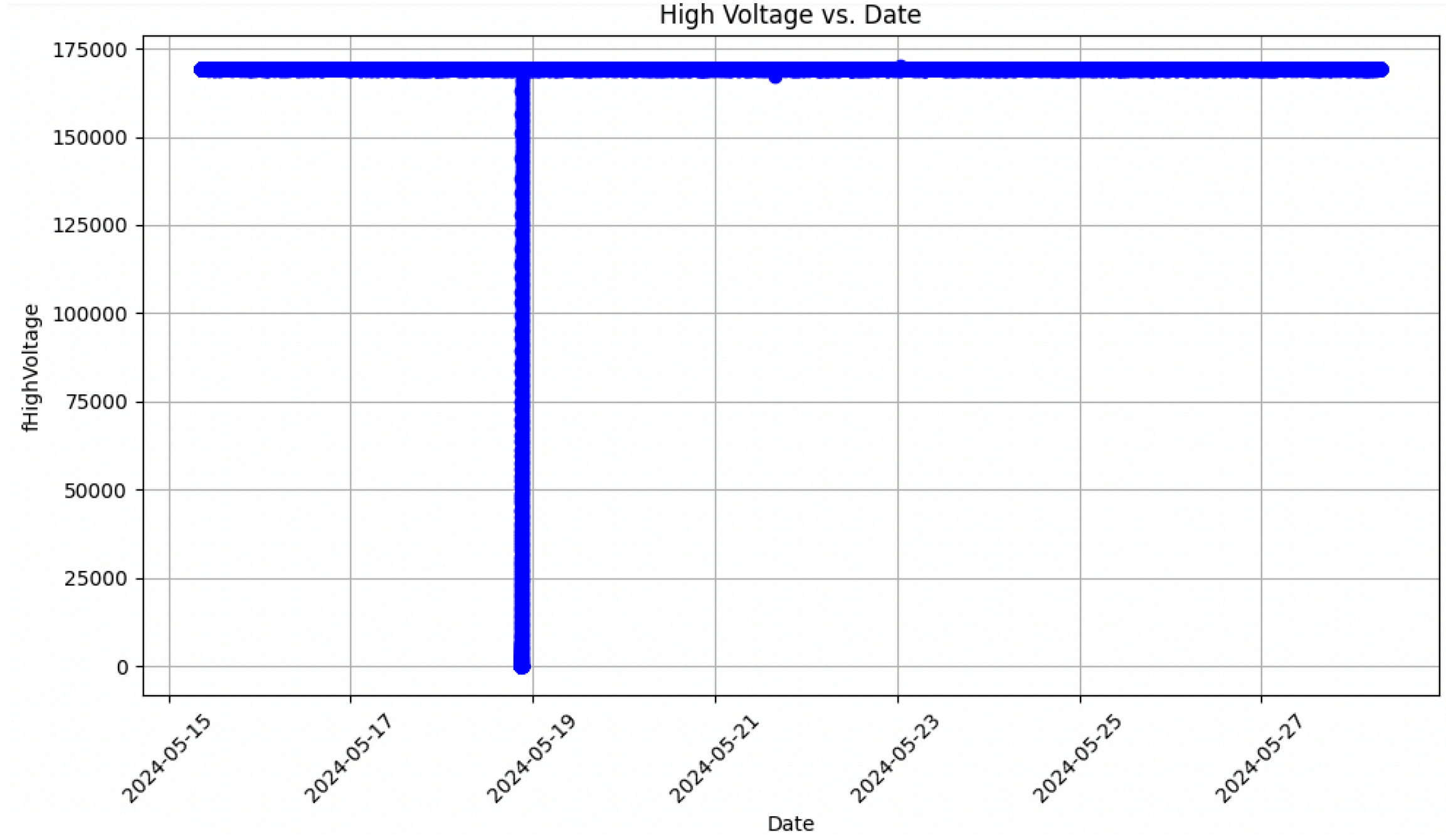
```
High Voltage Mean for the Apr15_Apr30_2024: 13890.849748030647
High Voltage Std for the Apr15_Apr30_2024: 9535.544910411305
High Voltage Variance for Apr15_Apr30_2024: 90926616.73847096
High Voltage Sum for the Apr15_Apr30_2024: 8180085272.169532
```

# High Voltage - TimeStamp histograms Month: May

Sensor id:name(s) in DCS-DB: "48002299330842" : "NP04\_DCS\_01:Heinz\_V\_Cathode."



```
High Voltage Mean for the May1_15_2024: 60009.058075501445
High Voltage Std for the May1_15_2024: 79241.95458046059
High Voltage Variance for May1_15_2024: 6279287365.731778
High Voltage Sum for the May1_15_2024: 33642338147.345695
```



```
High Voltage Mean for the May15_30_2024: 168961.04703029804
High Voltage Std for the May15_30_2024: 4878.6776649401945
High Voltage Variance for May15_30_2024: 23801495.75838631
High Voltage Sum for the May15_30_2024: 87812942245.72758
```

# Status and Plans

- Today, I showed some histograms for HV-TimeStamp DB to discuss the results.
  - > *Should I continue to make histograms for each months in a year?*
  - > *What should we do with the weird periods (i.e. negative V) in the HV in the plots?*
  - > *I looked for only the Sensor id:name(s) in DCS-DB: "48002299330842" : "NP04\_DCS\_01:Heinz\_V\_Cathode." Should I look at another descriptions too? (In the google link: <https://docs.google.com/document/d/1uJAJA09neah6hNmW--ylgbfpBrDquMfwdveuVsewh6w/edit>)*
- We are proceeding with means/RMSs at the moment and way to proceed is to start putting the mean and RMS of each run into the DB.
- I will grab all of the channels from the NP04 SCDB and put them into a test table in the ucondb.
- Today, I show the results for some months March, April, May 2024, but I will send to the ucondb for each specific run number defined in NP04 for each sensor description.
  - > *For each run, the time period is very short, like ~ 1 day. Should I send means/RMS either for very short time periods as in the below or month by month as I showed in the previous slides? Please see the example for each specific run numbers:*

```
ddaq-v4.4.0-rc3-a9"], [25115, "Tue, 23 Apr 2024 11:31:00 GMT", "Tue, 23 Apr 2024 13:28:28 GMT", "np04_hd", "PROD", "fdda"], [25114, "Tue, 23 Apr 2024 09:39:10 GMT", "Wed, 24 Apr 2024 16:01:57 GMT", "np04_hd", "PROD", "fddaq-v4.4.0-rc5-a9"], Apr 2024 09:30:16 GMT", "Tue, 23 Apr 2024 09:41:25 GMT", "np04_hd", "PROD", "fddaq-v4.4.0-rc3-a9"], [25112, "Tue, 23 Ap
```

```
[["RUN_NUMBER", "START_TIME", "STOP_TIME", "DETECTOR_ID", "RUN_TYPE", "SOFTWARE_VERSION"], [{"RUN_NUMBER": 25114, "START_TIME": "Tue, 23 Apr 2024 09:39:10 GMT", "STOP_TIME": "Wed, 24 Apr 2024 16:01:57 GMT", "DETECTOR_ID": "np04_hd", "RUN_TYPE": "PROD", "SOFTWARE_VERSION": "fddaq-v4.4.0-rc5-a9"}]] [nbostan@lxplus964 slowrest]$ pwd
```