Allison Scanner App

Now supports multiple ion sources

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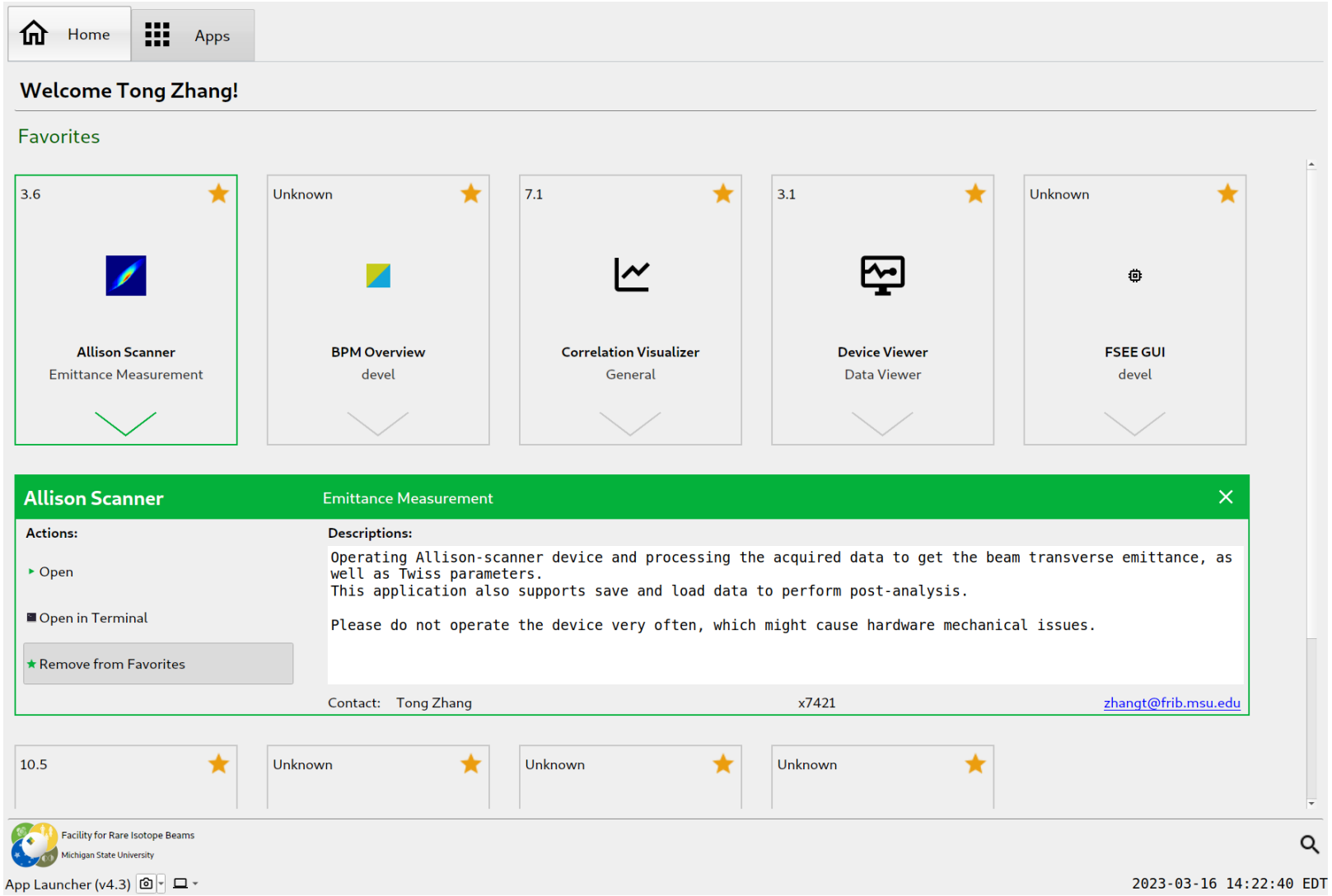
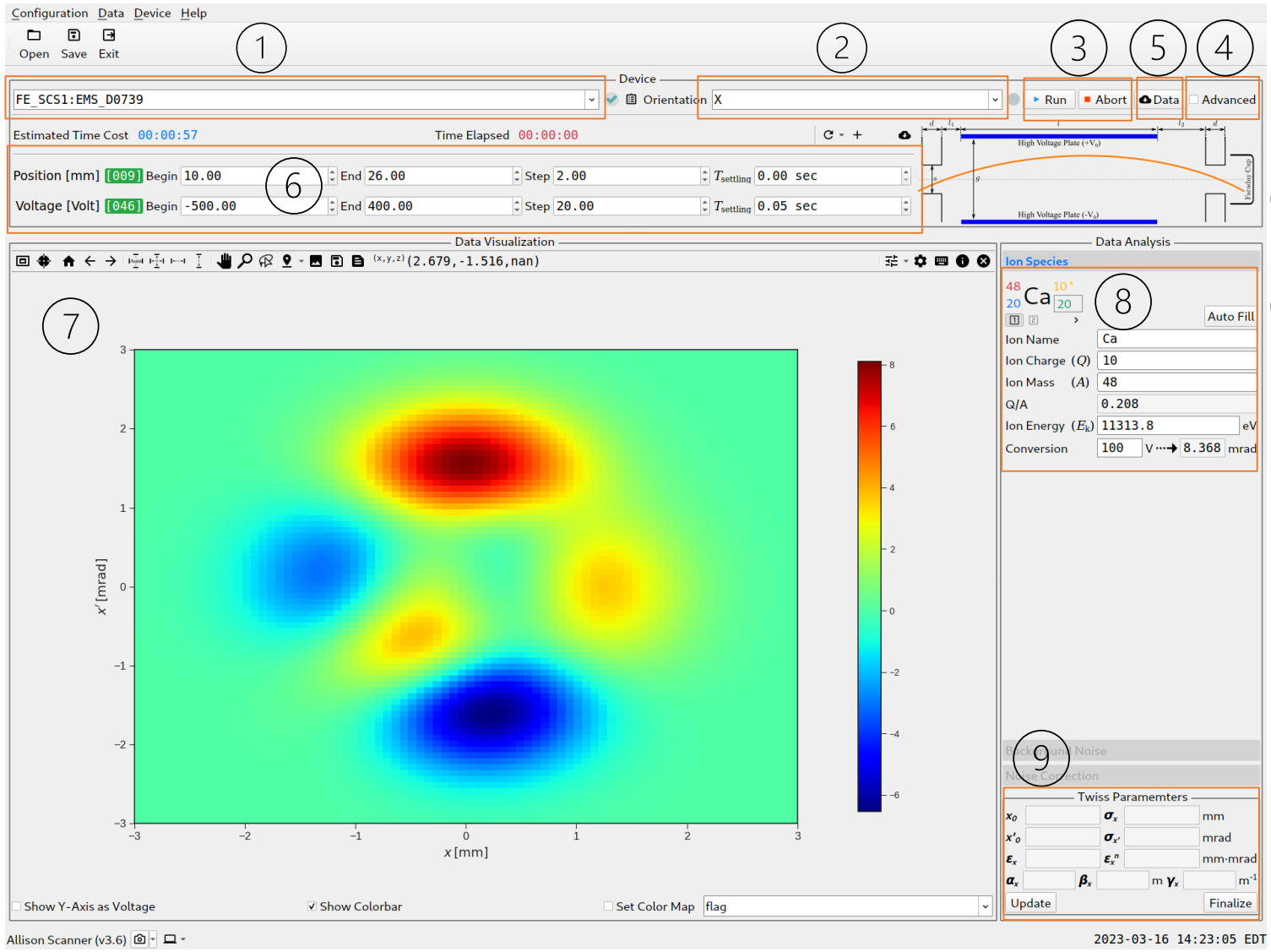
Locate and Open the App



- See the brief description of the app
- Click to start up the app, please note the pop-up dialogs before the app getting started, it requires user clicking.

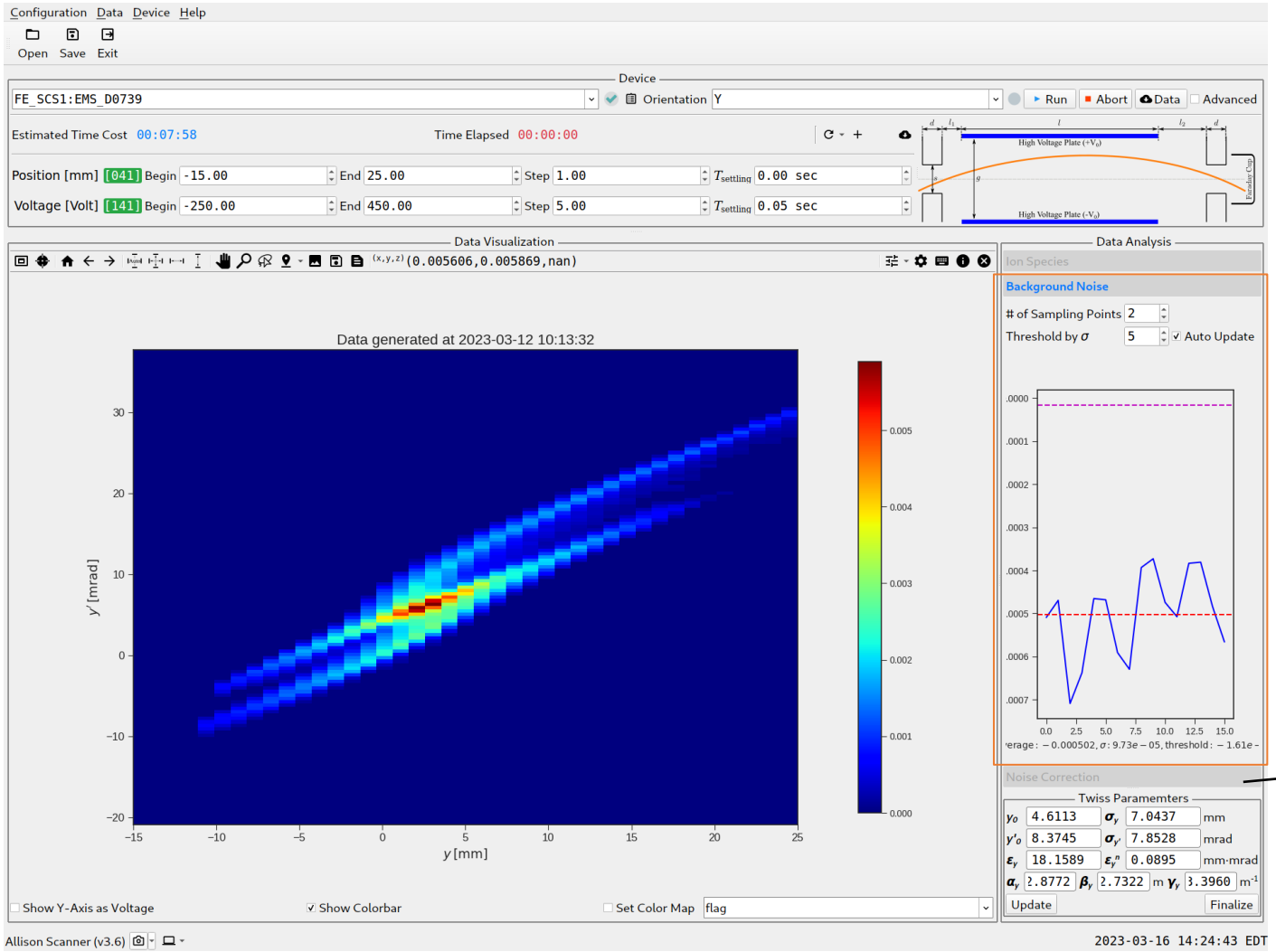
The Main App Interface

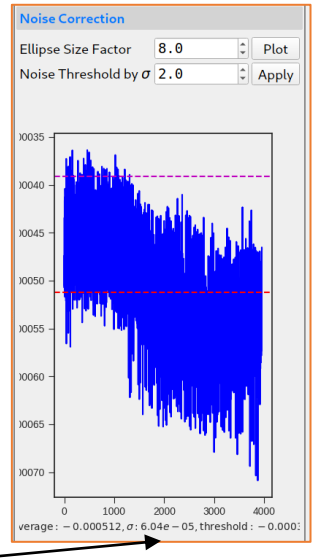
- (1) Select device, two options for two ion source beamline
- (2) Select X or Y direction for the measurement
- (6) Set up the scan ranges for voltage and position, make sure the total steps is an integer, if not, the green background area will be shown as red as a warning.
- (7) The 2D image will be refreshing as the scan procedure is under-going. The Y-axis shows the converted x' from voltage, see also in (8)



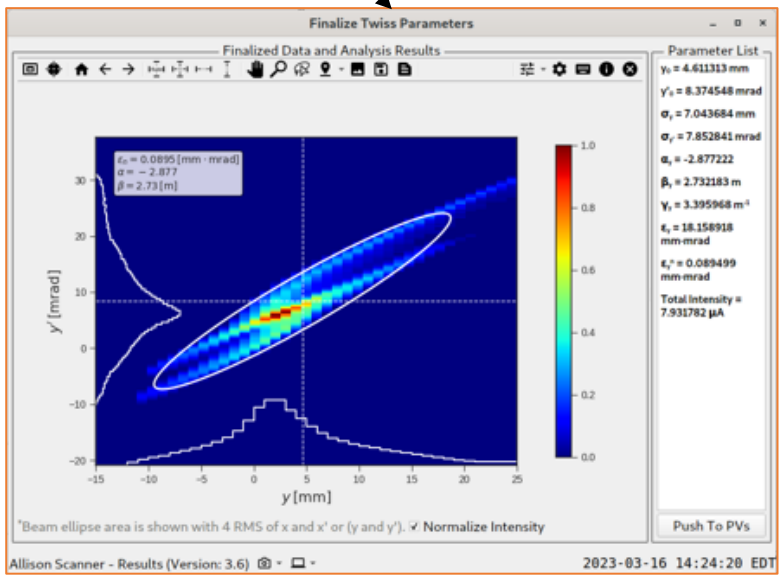
- (3) Start or stop the device scan
- (4) See more info of device configs and motor position
- (5) Pull the data that generated from last scan, and do the analysis
- (8) The ion source species info, plus the high voltage, will be auto-updated based on the active ion source
- (9) The Twiss parameters as the final analyzed results, push Finalize will have a more detailed pop-up windows with more information

Analyze Example





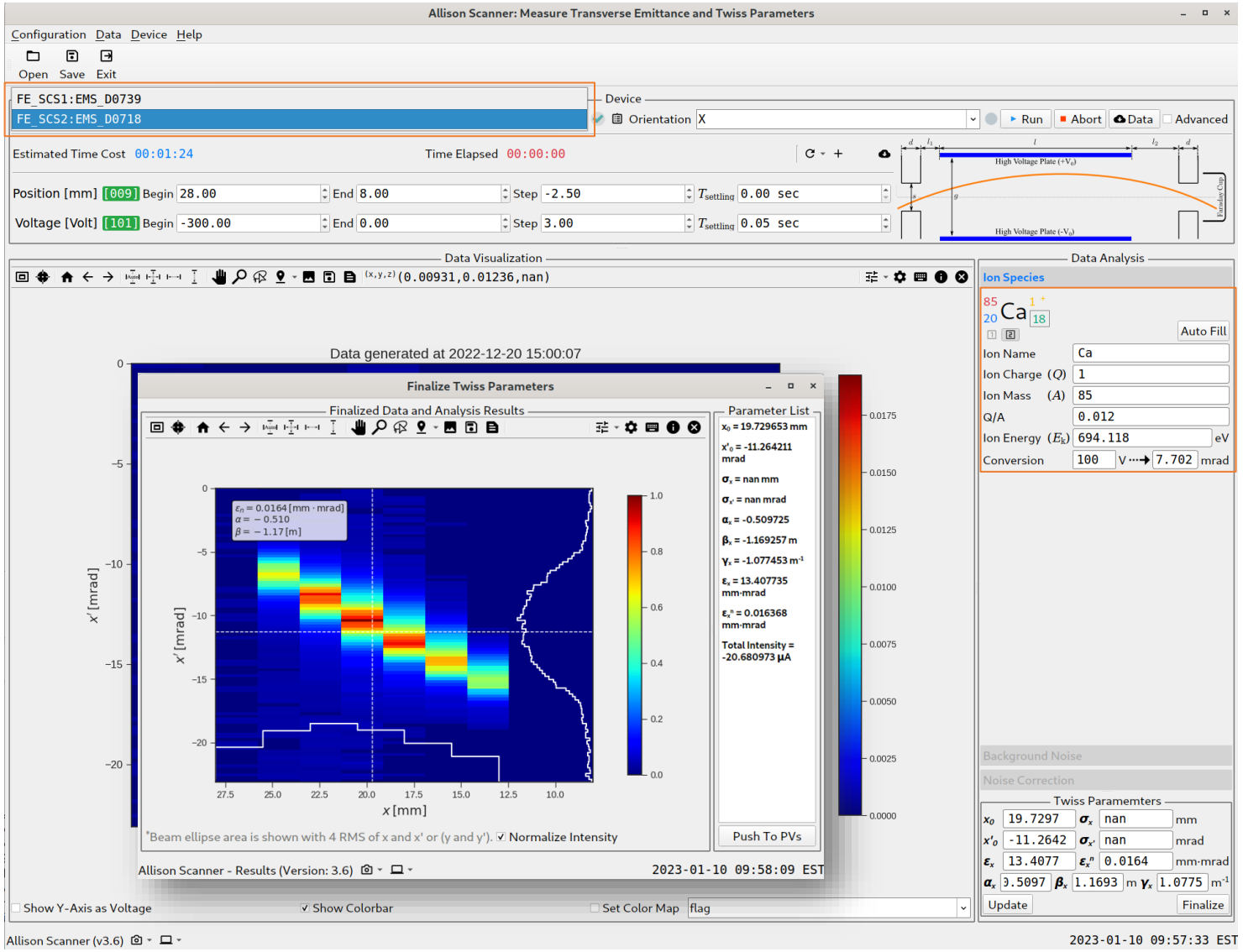
- Two tabs in the “Data Analysis” section could be used to adjust the analysis routine
- The background noise reduction
- And the overall noise correction
- Adjust the numbers to see how the image and results change
- Push the Finalize button to get the detailed report



About the data

- Data is supported to save and load into the app
- There will be a question dialog before exiting the app about saving the data into a file
- The data format is enhanced to accommodate the new device in the high-power source beamline, but is back-compatible with the previous data

Multiple Ion Source Support



- App version: 3.6
  - Showing on App Launcher or Help → About of this app
- Support a new Allison Scanner device (EMS): FE_SCS2:EMS_D0718 in the High Power Ion Source Beamline
- Choose the EMS device from the dropdown menu, will adapt the UI components:
  - Ion Species: element name, Q, A, Q/A, energy, and voltage to divergence interpretation…
  - You may also see the new ion species info widget on Settings Manager and other apps that use it, which will be used to add multiple ion source support.
  - [optional] Click [1] or [2] will switch ion source, [1]: Artemis, [2]: new source

Embedded Ion Source Info in the Saved Data

```
1133  },
1134  "Beam Source": {
1135    "_id": "ISRC2",
1136    "Ion Name": "Ca",
1137    "Q": 1,
1138    "A": 85,
1139    "Ek": {
1140      "value": 694.118,
1141      "unit": "eV"
1142    }
1143  },
```

- A new key is added to the format of saved data, "_id", under "Beam Source", to indicate which ion source is working with, 'ISRC2' is for the new high power ion source, and 'ISRC1' is for Artemis.
- For the data files that saved with previous versions, no such key exists, they all refer to 'ISRC1'.

New PVs for the Analyzed Results

- Field value PV: “FE_SCS2:EMS_D0718:{field}_RD”
- Field:
  - XCEN (centroid of x), XPCEN, (centroid of x’)
  - XALPHA (alpha of x), XBETA (beta of x), XGAMMA (gamma of x), XEMIT (geometric emittance of x), XNEMIT (normalized emittance of x)
  - XINTEN (total intensity)
  - Replace all ‘X’ with ‘Y’ for Y plane.
- Menu: Data → Auto Push Results to PVs, by default it is checked.

Device geometry info

- Check the “Advanced” checkbox to see more information regarding the device hardware geometry configurations.