Brookhaven National Laboratory

U.S. DEPARTMENT OF ENERGY

An Overlook of the B-Field Test Dataset

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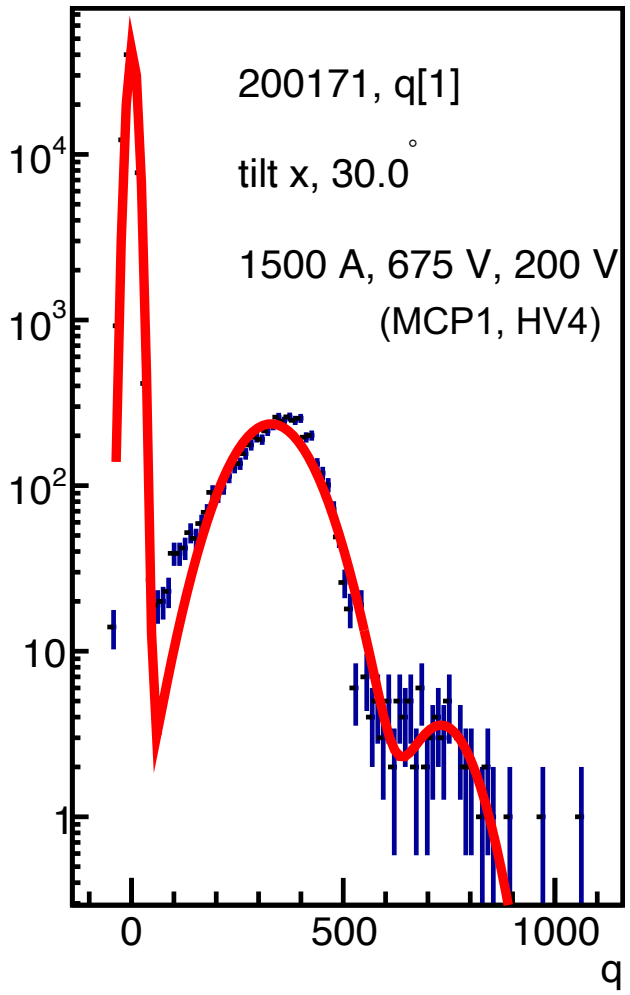
Run Selections

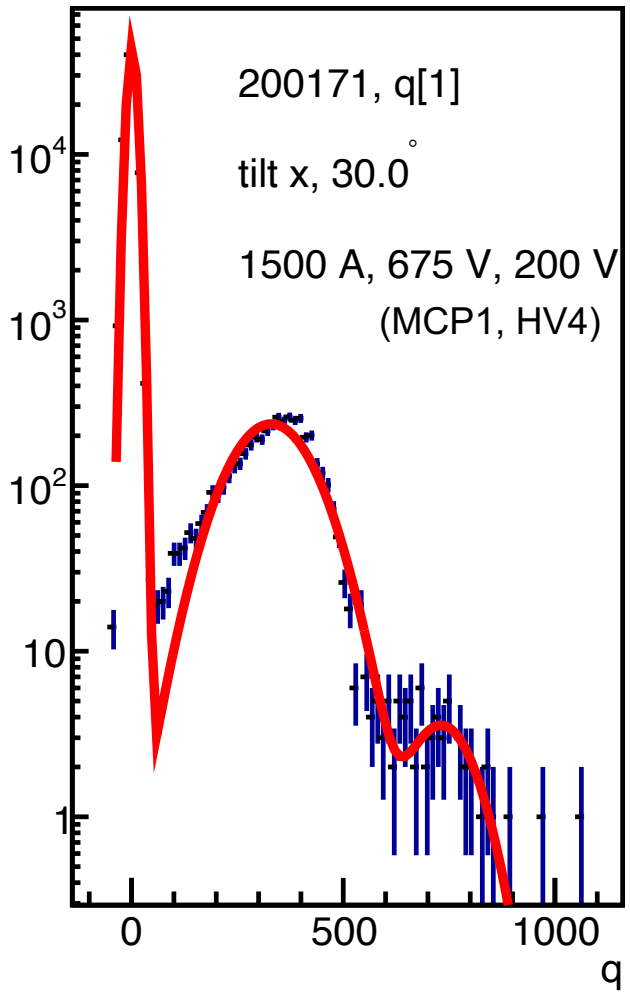
- Good=1
- Num. of event>=100,000
- Tilt axis = x or y
- Magnet current>=0
- Tilt angle >=0
- MCP1 bias voltage = MCP2 bias voltage >0
- HV4=200V
- channelSelection>=0

Extract Mean Charge



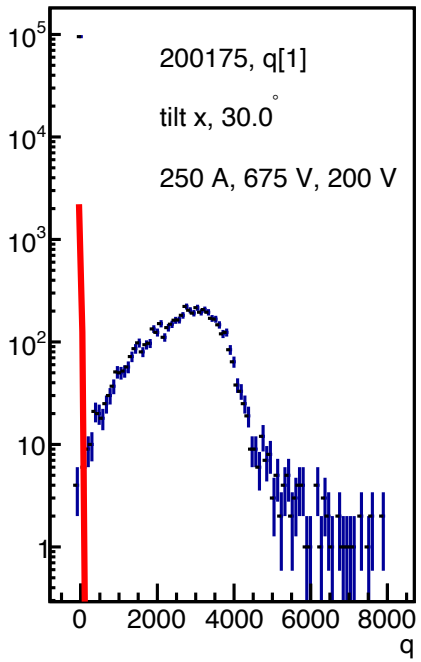
1. Fit pedestal first
2. Fit the 1st photon peak excluding the pedestal region from the step 1
3. Fit the full q distribution with 3 Gaussians. Fit results from step 1 and 2 are used as the starting parameters

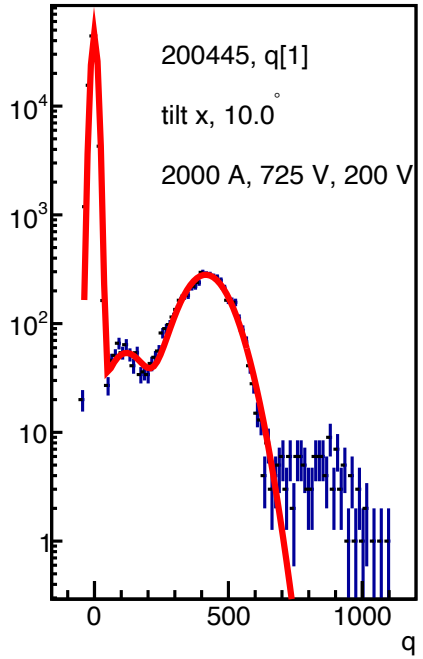
Extract Mean Charge

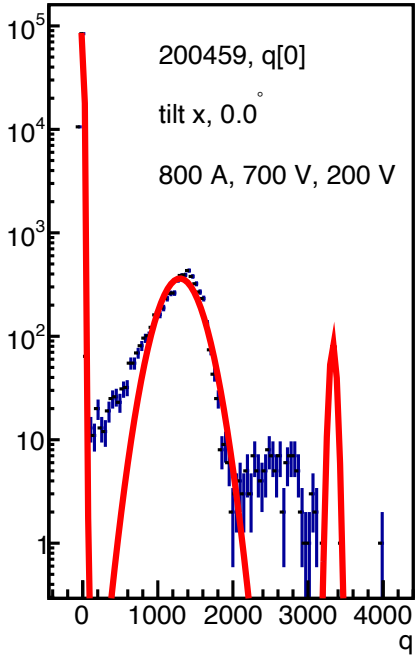


1. Fit pedestal first
2. Fit the 1st photon peak excluding the pedestal region from the step 1
3. Fit the full q distribution with 3 Gaussians. Fit results from step 1 and 2 are used as the starting parameters

Does not work 100% of the time



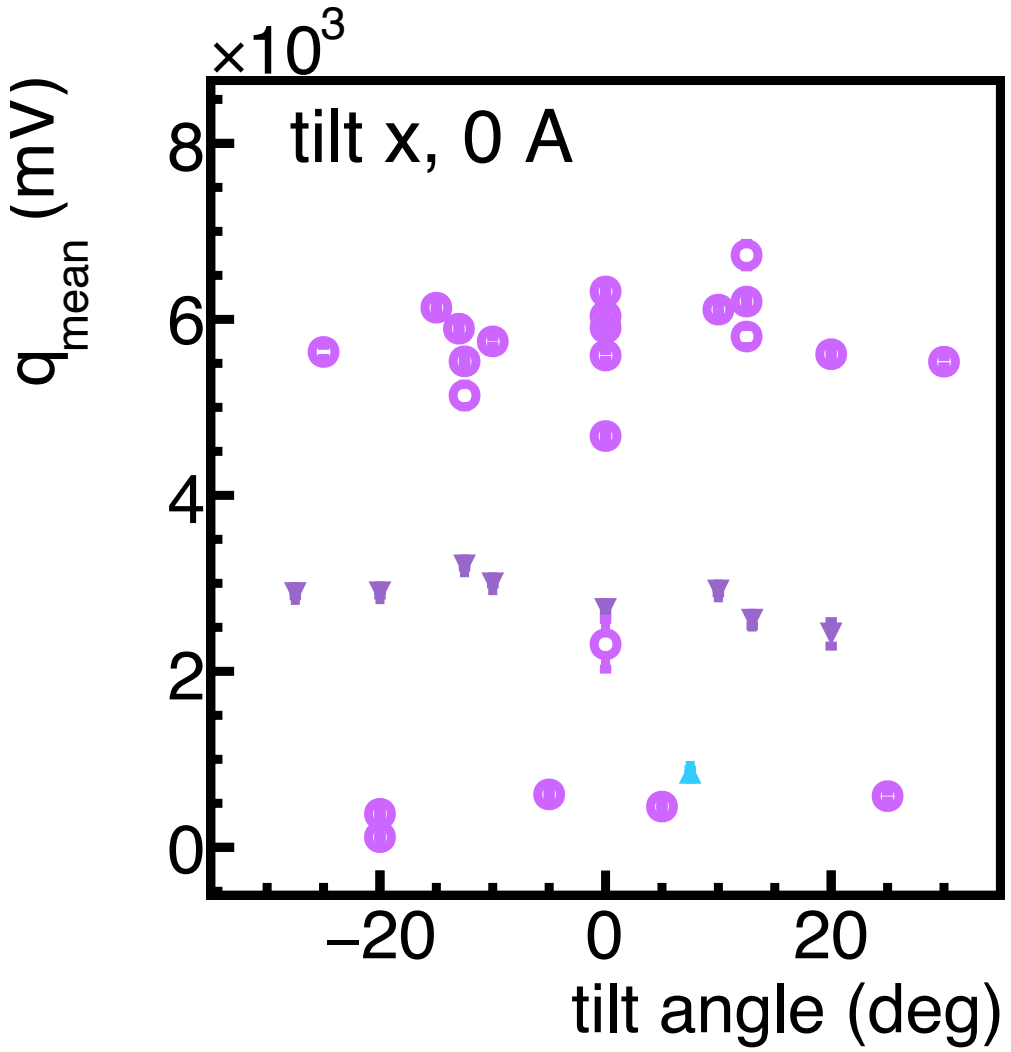




Mean Charge vs Tilt Angle

Subtitle

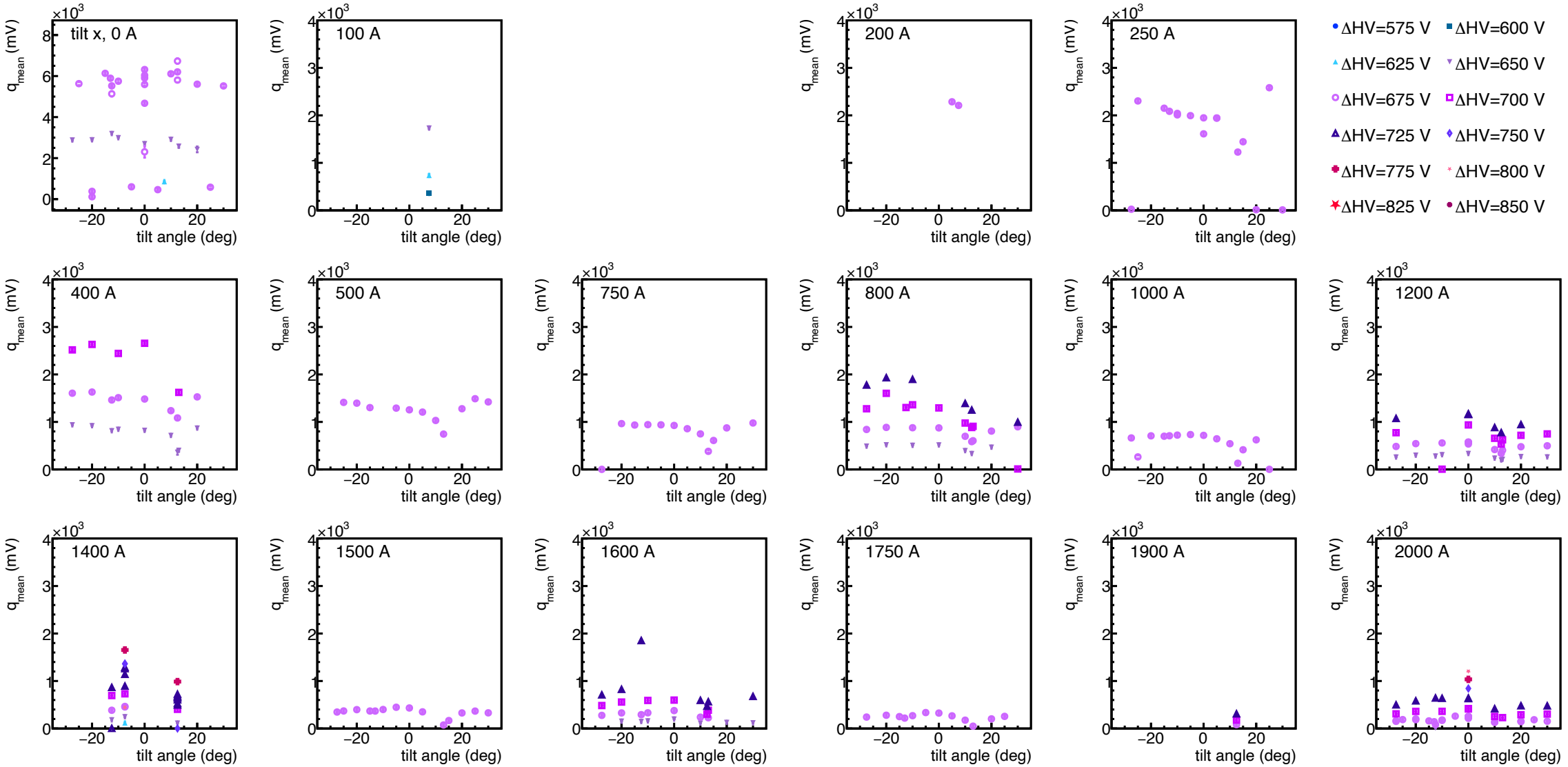
Mean Charge vs Tilt Angle (w.r.t. x-Axis)



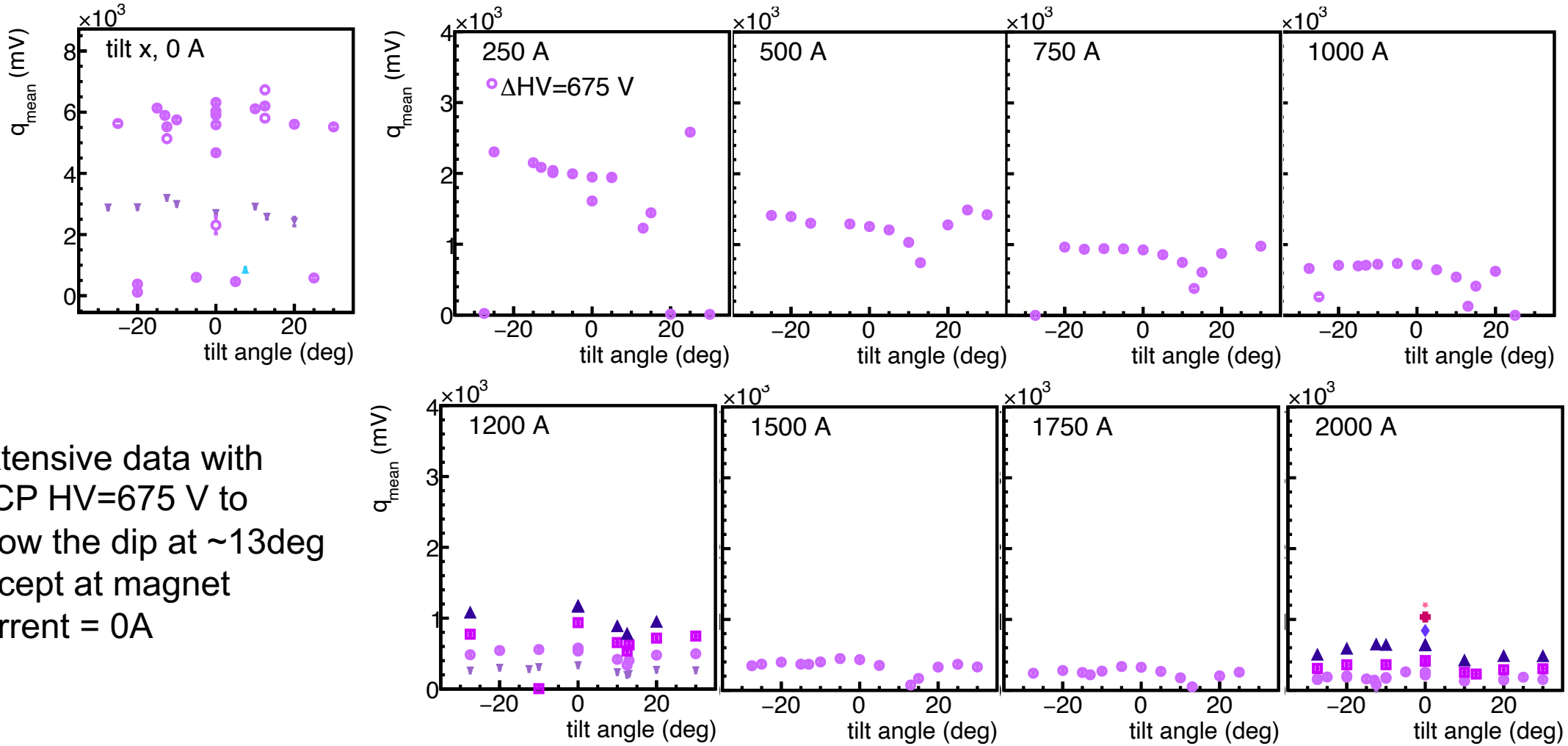
Exclude runs with a qmean<=0 and a relative fit error>=100%

- ΔHV=575 V
- ΔHV=600 V
- ΔHV=625 V
- ΔHV=650 V
- ΔHV=675 V
- ΔHV=700 V
- ΔHV=725 V
- ΔHV=750 V
- ΔHV=775 V
- ΔHV=800 V
- ΔHV=825 V
- ΔHV=850 V

Mean Charge vs Tilt Angle (w.r.t. x-Axis)

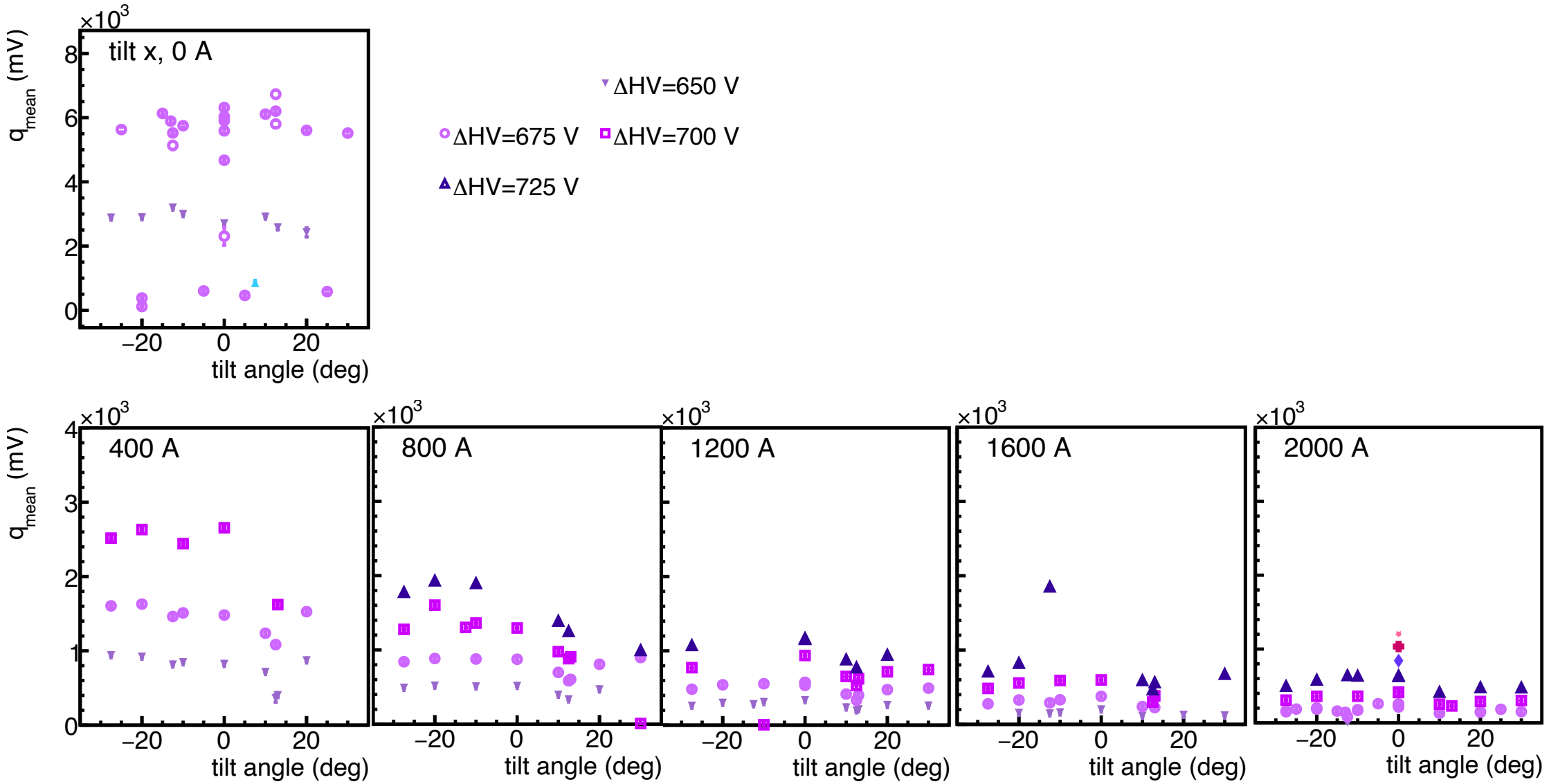


Mean Charge vs Tilt Angle (w.r.t. x-Axis)

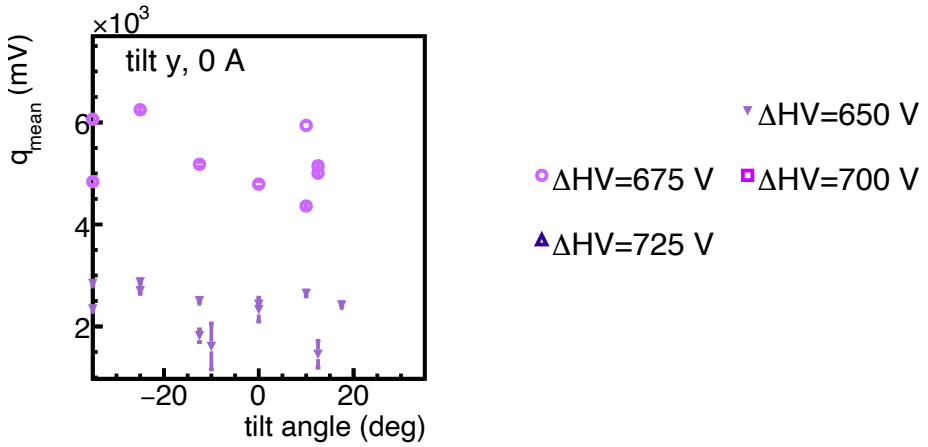


Extensive data with MCP HV=675 V to show the dip at ~13deg except at magnet current = 0A

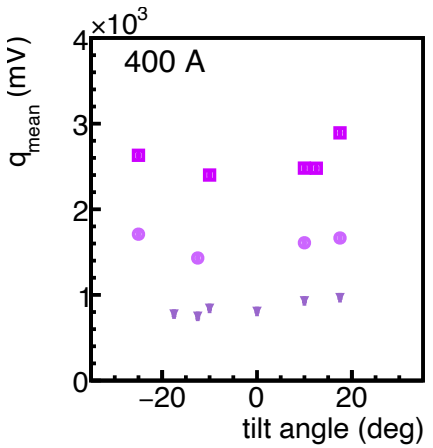
Mean Charge vs Tilt Angle (w.r.t. x-Axis)

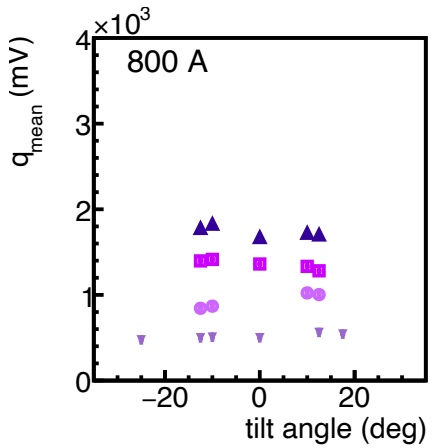


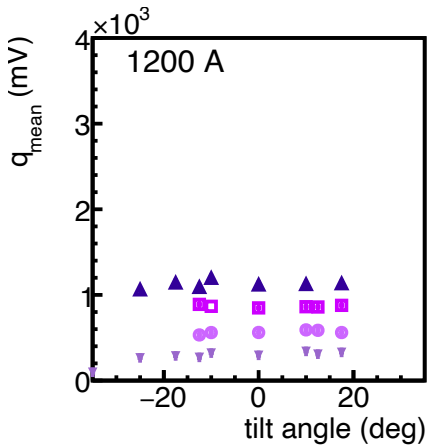
Mean Charge vs Tilt Angle (w.r.t. y-Axis)

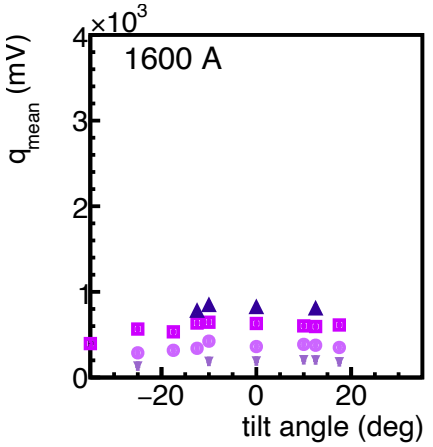


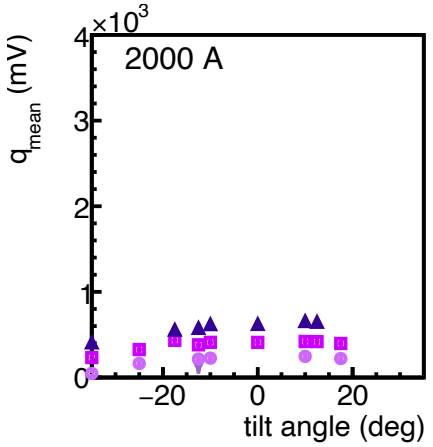
- No dip when tilt in y axis?
- It would be nice to fill up the space at 5 or 7.5 deg, and at large angles
- Add data for magnet current =1400 A (~1.3 T)







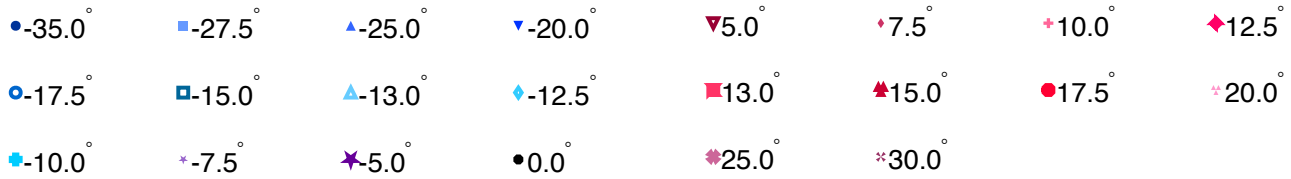


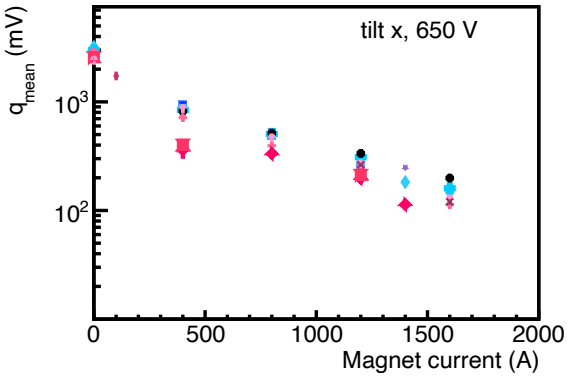


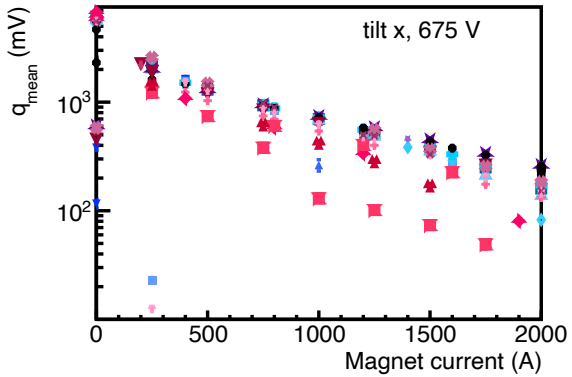
Mean Charge vs Magnet Current

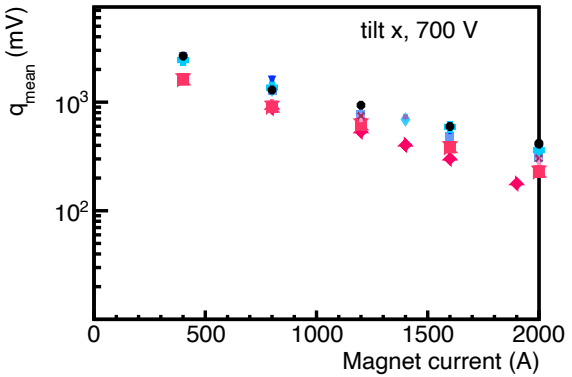
Subtitle

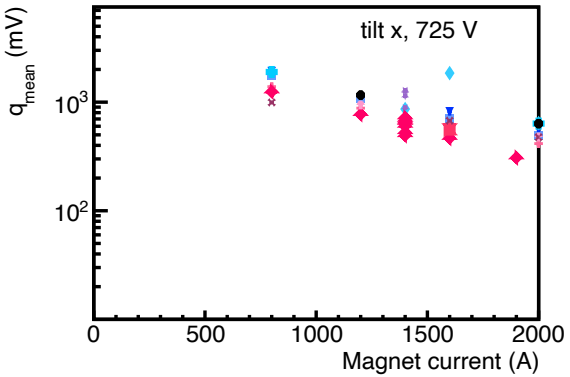
Mean Charge vs Magnet Current

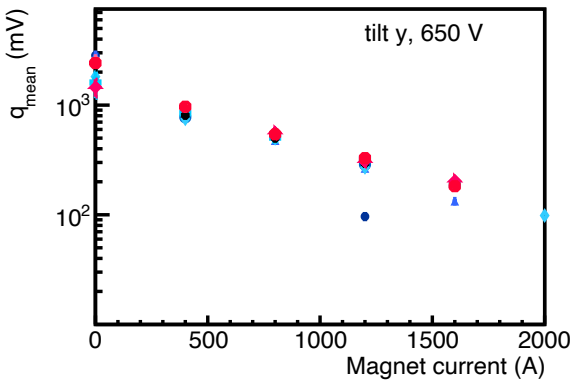


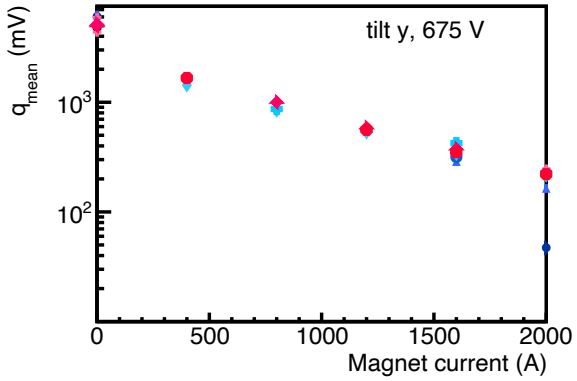


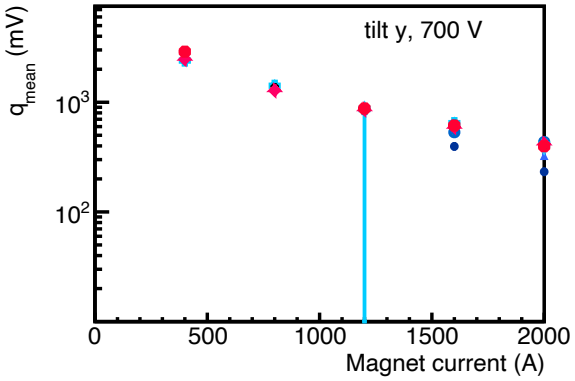


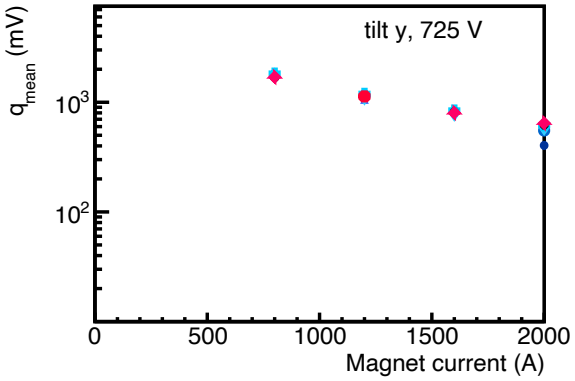










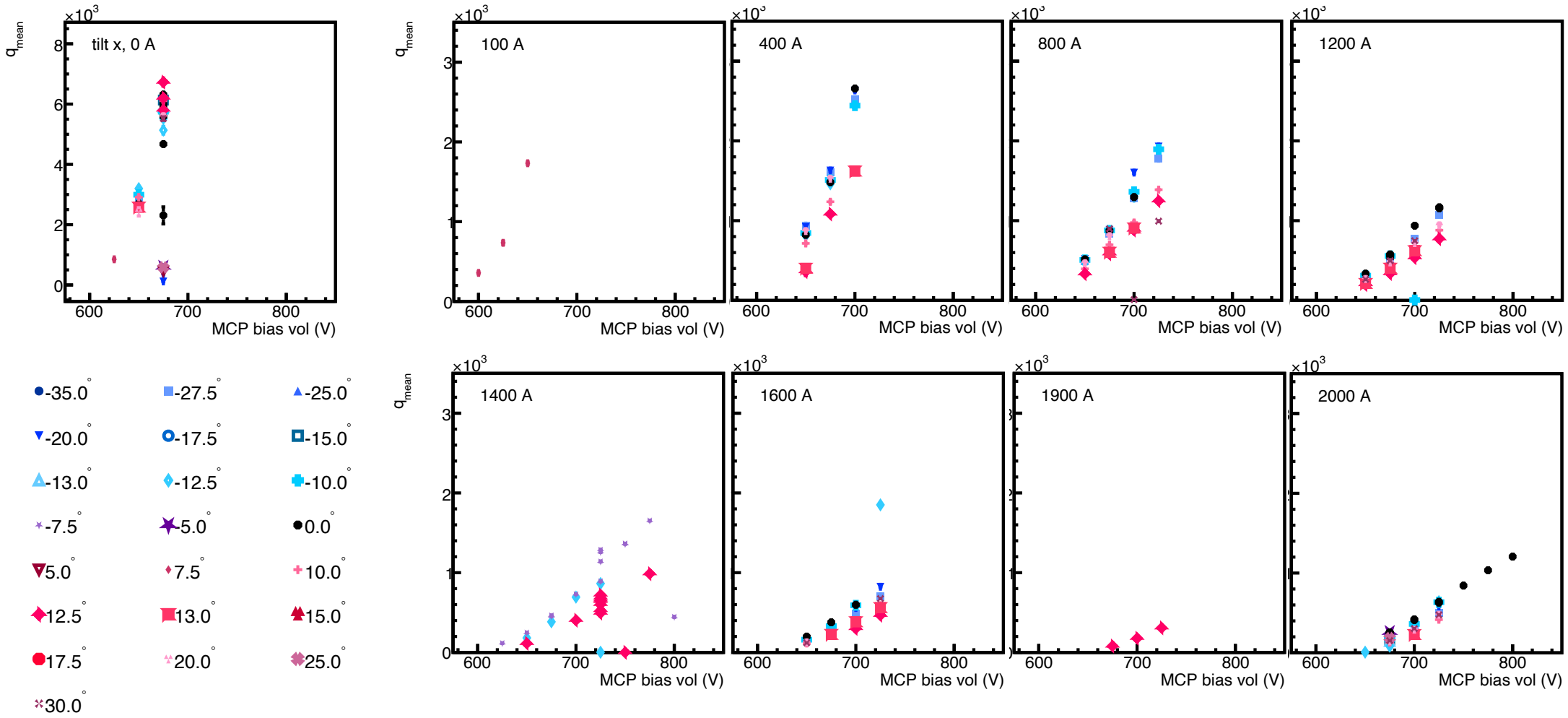


Gain is more sensitive to angle when tilting in x axis

Mean Charge vs Bias Voltage

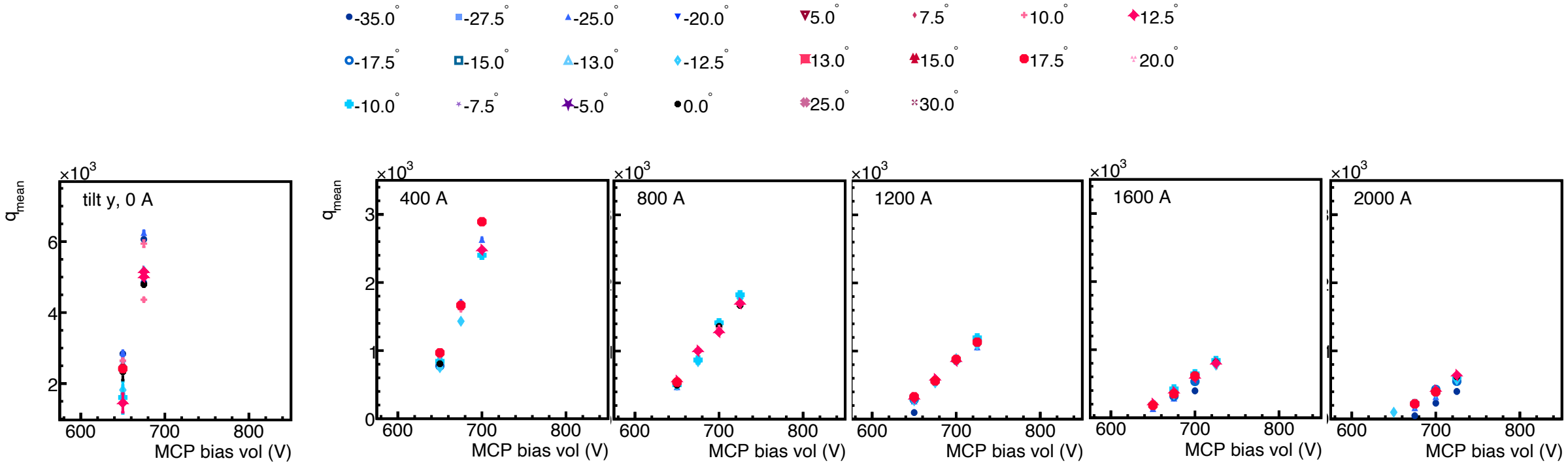
Subtitle

Mean Charge vs MCP Bias Voltage (Tilt in x Axis)



- Gain is proportional to MCP bias voltage
- The slope decreases as magnet current increases

Mean Charge vs MCP Bias Voltage (Tilt in y Axis)

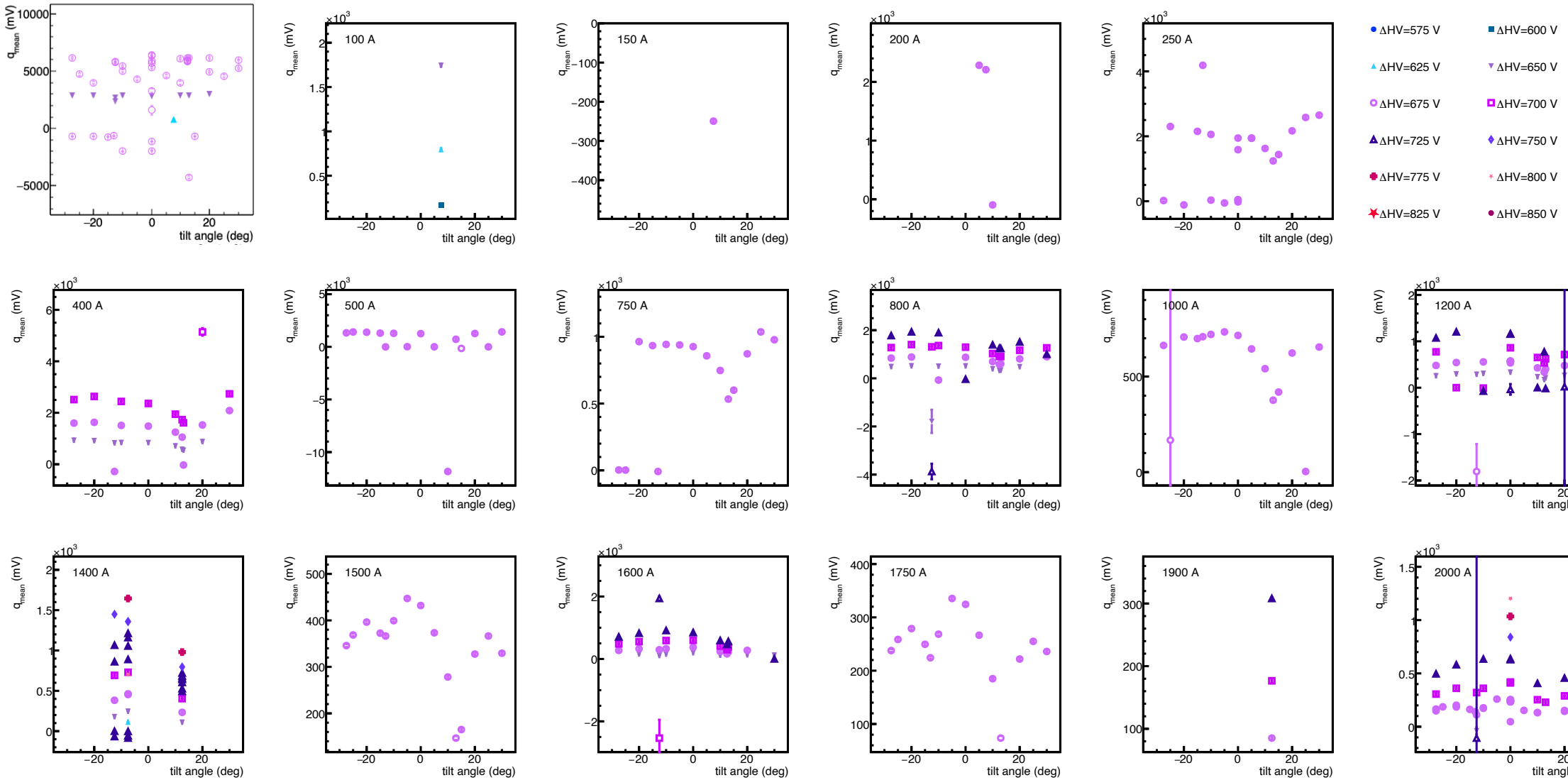


Gain is less sensitive to angle when tilting in y axis

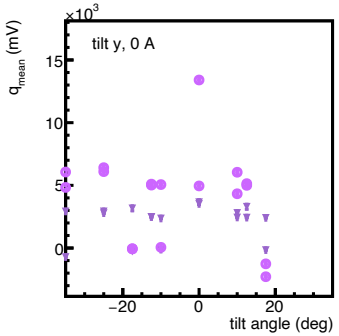
The Ugly Version

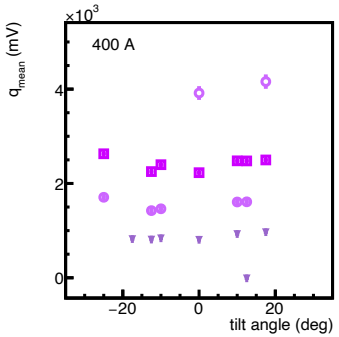
Subtitle

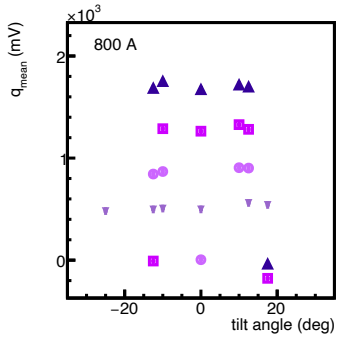
Mean Charge vs Tilt Angle (w.r.t. x-Axis)

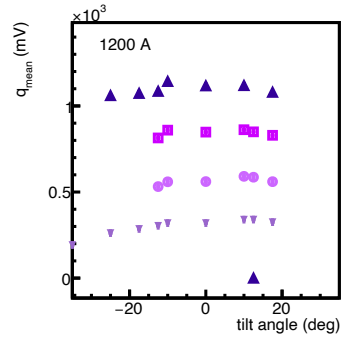


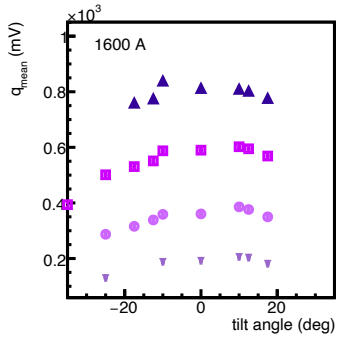
Mean Charge vs Tilt Angle (w.r.t. y-Axis)

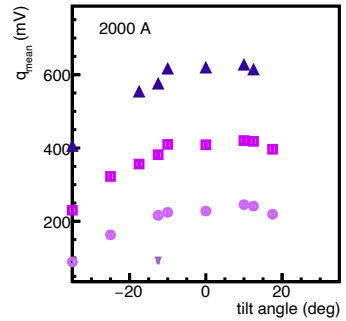




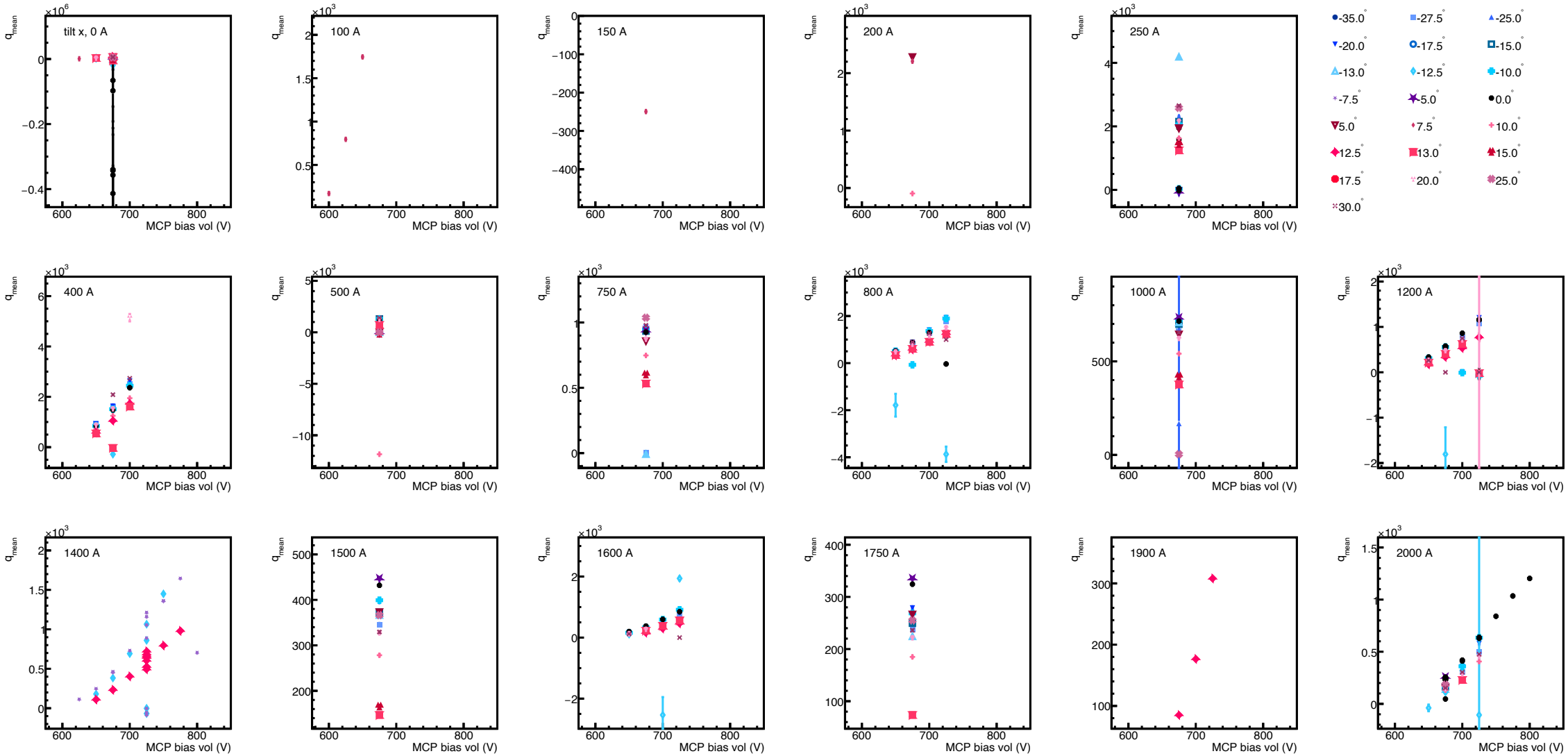




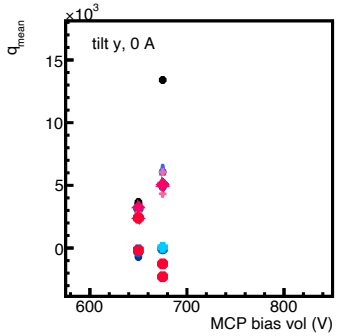


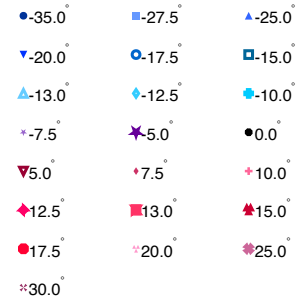


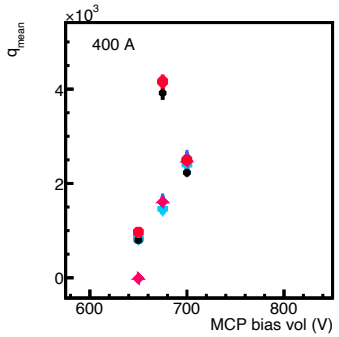
Mean Charge vs Bias Voltage (Tilt against x-Axis)

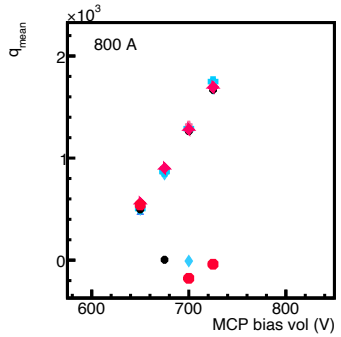


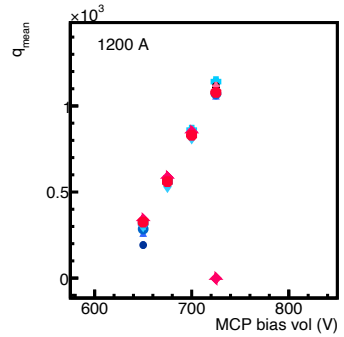
Mean Charge vs Bias Voltage (Tilt against y-Axis)

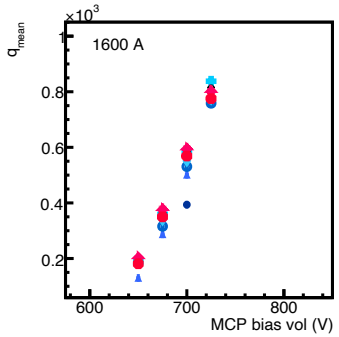


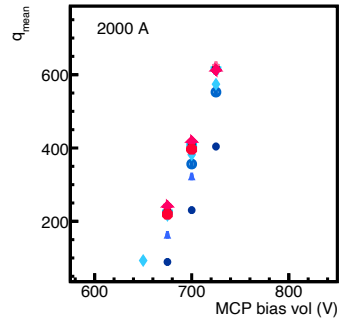




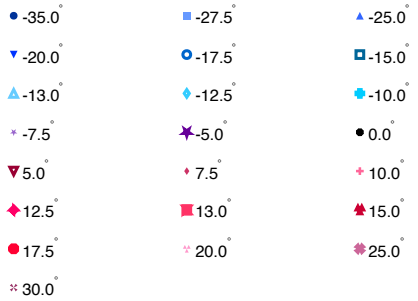


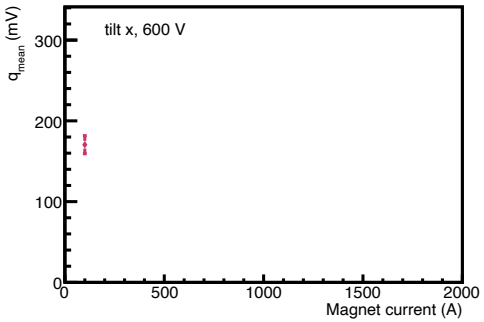


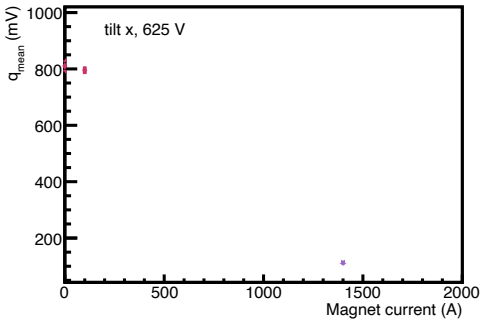


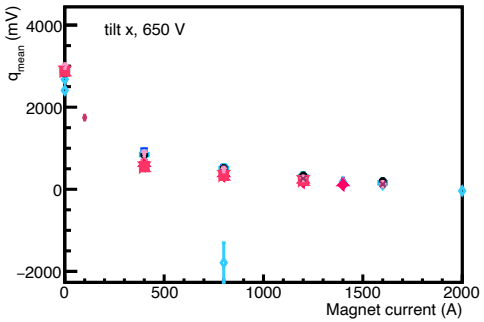


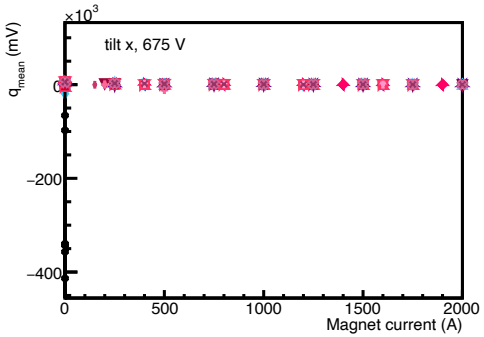
Mean Charge vs Magnet Current (Tilt against x-Axis)

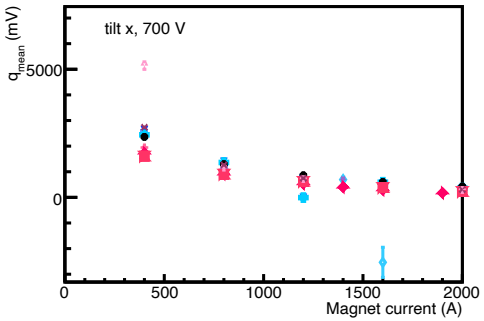


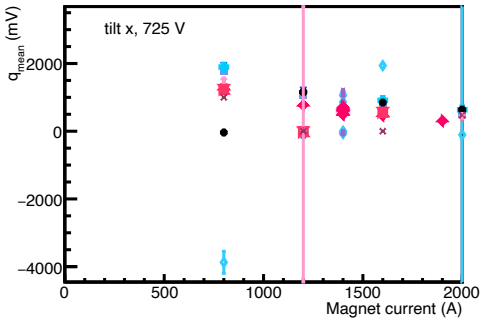


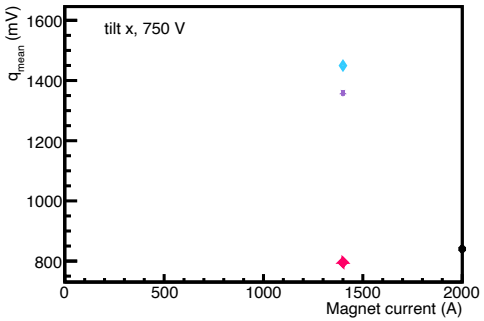


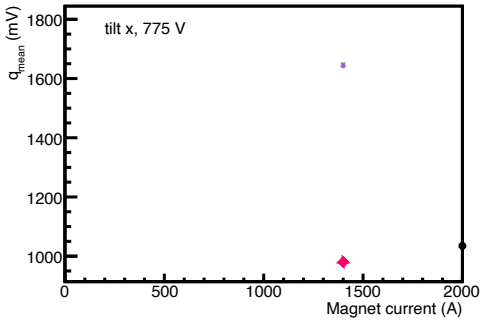


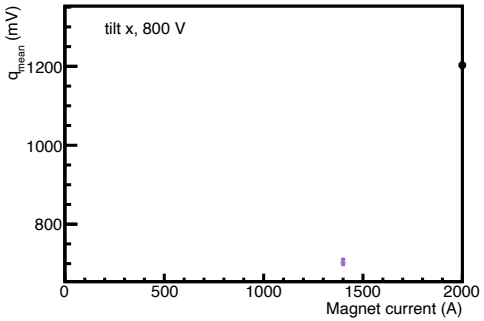












Mean Charge vs Magnet Current (Tilt against y-Axis)