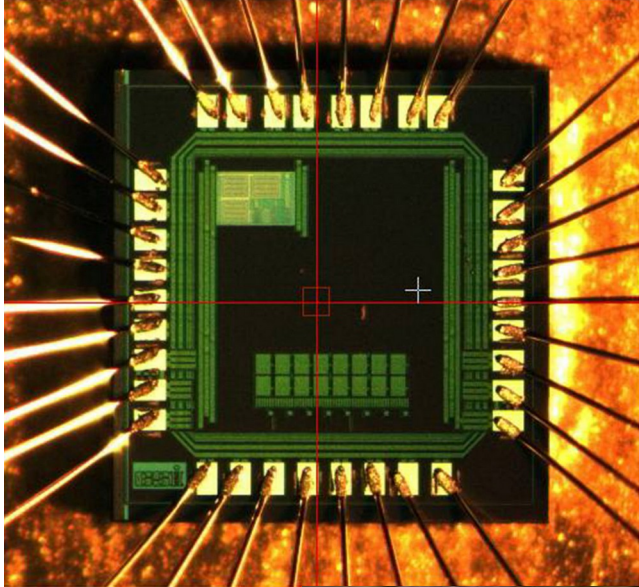
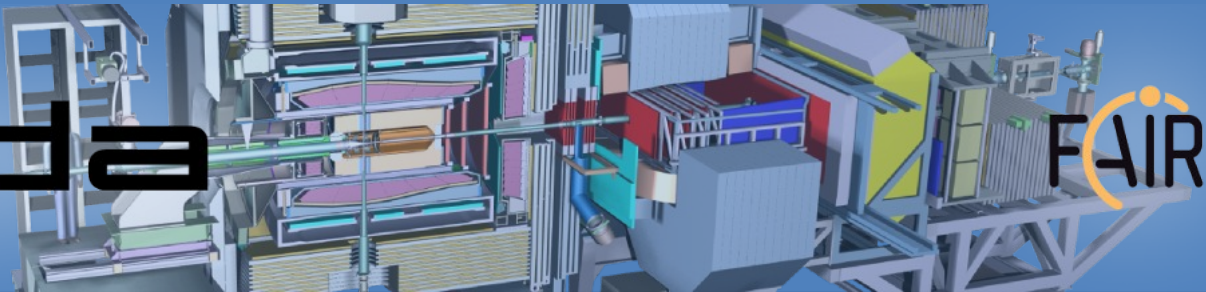


Status of the EMC HV Board Development

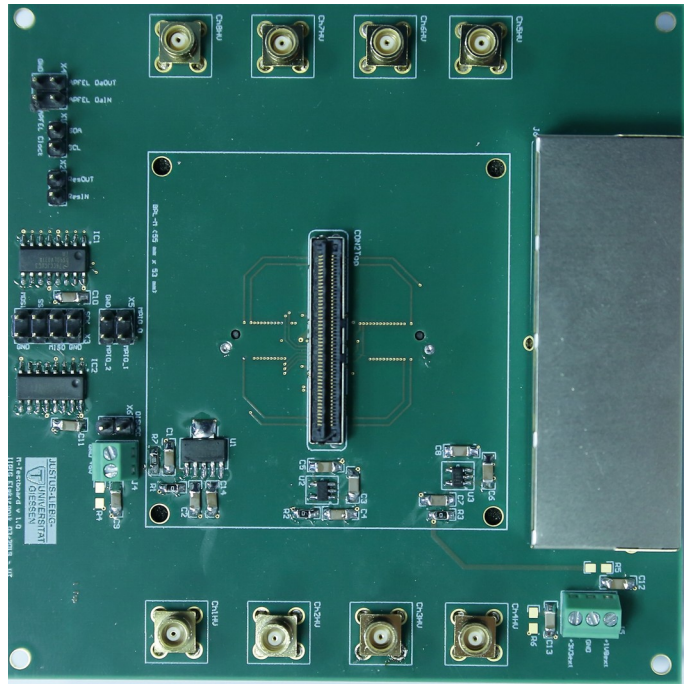


Christopher Hahn* for the PANDA collaboration
*2nd Physics Institute, University Gießen, Germany

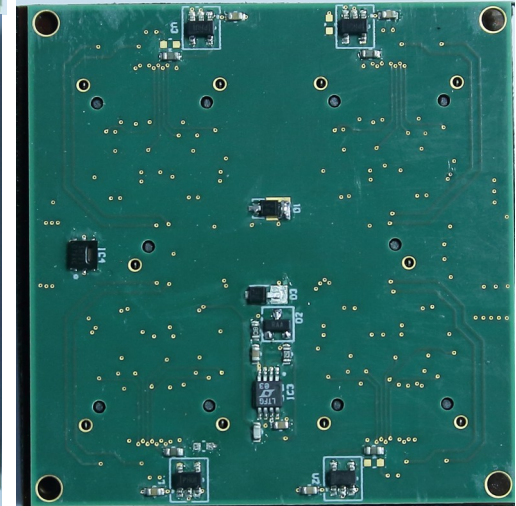
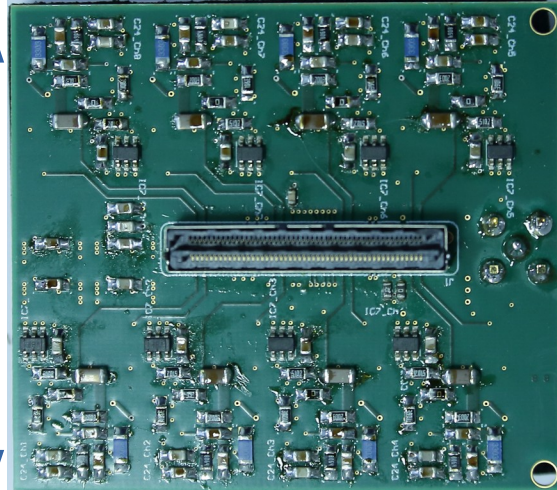
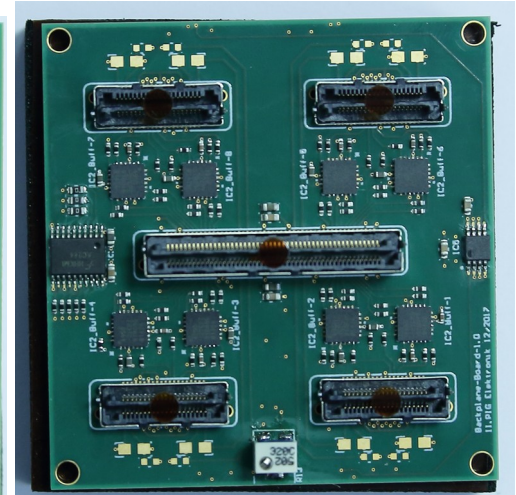
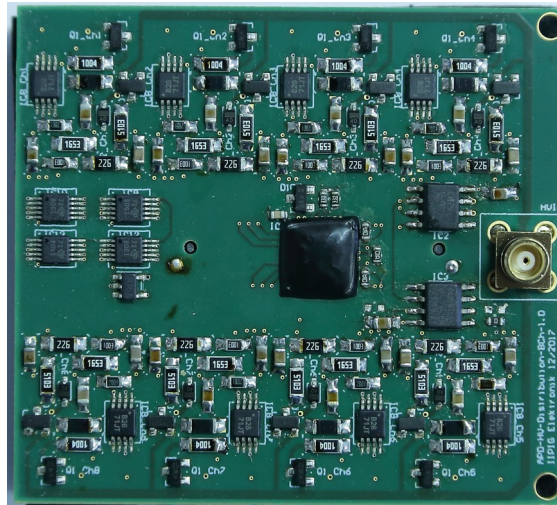


- **Overview**
- **Last prototype version of HV Board**
- **High-voltage measurements**
- **Detailed comparison between external and onboard measurements**
- **Conclusion and outlook**

Last prototype version of HV Board



53mm

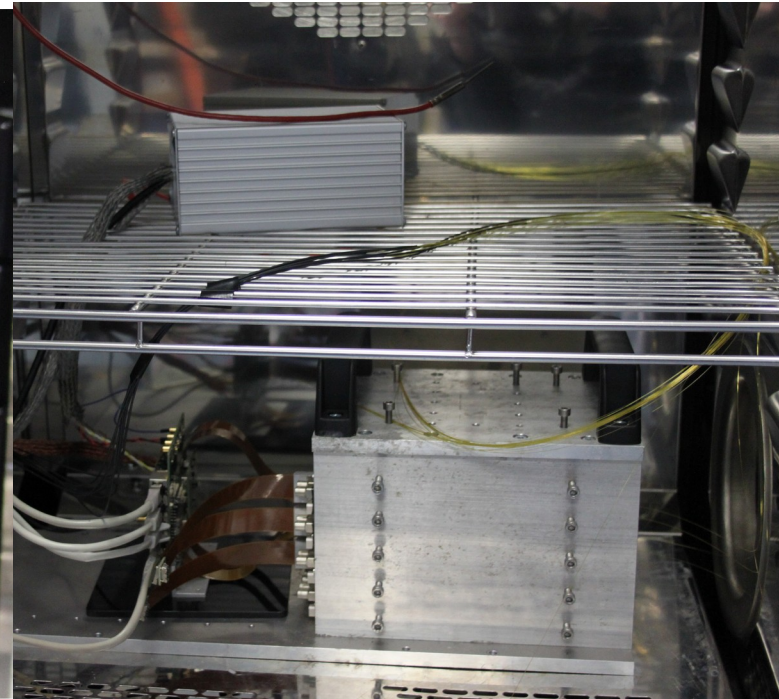
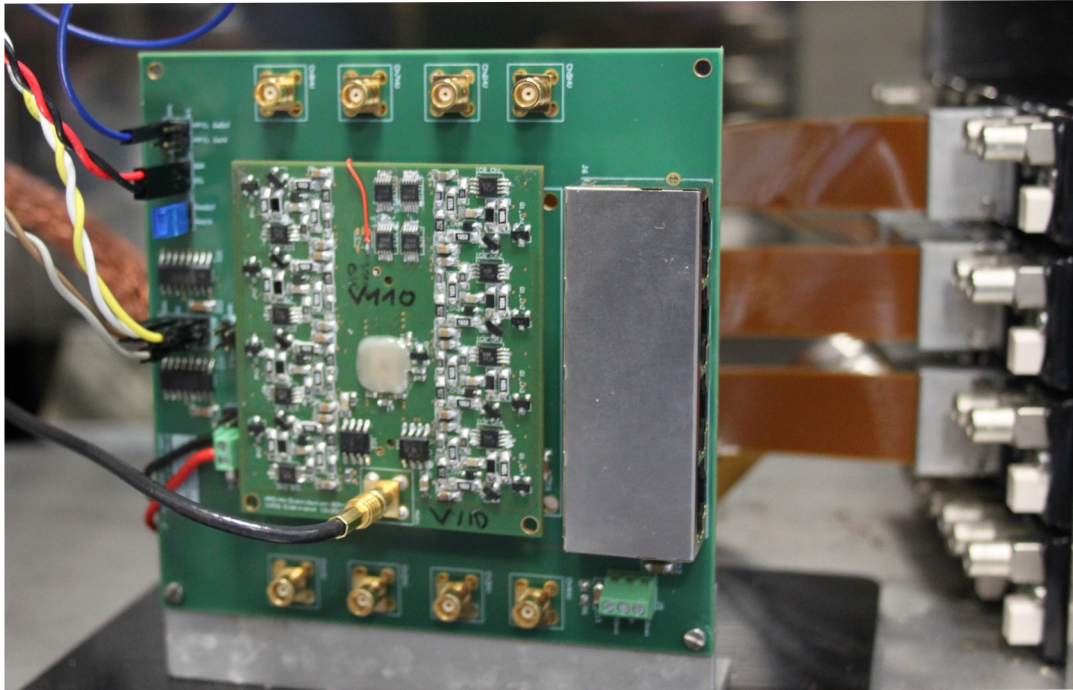


60mm

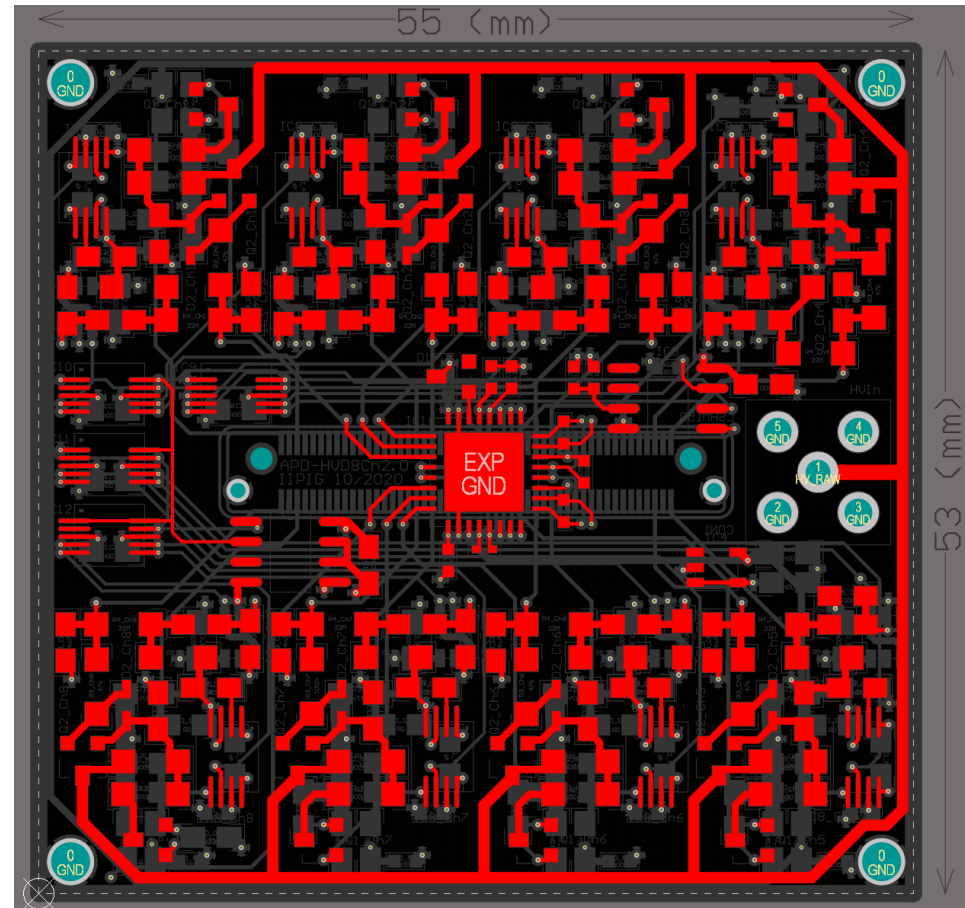
55mm

53mm

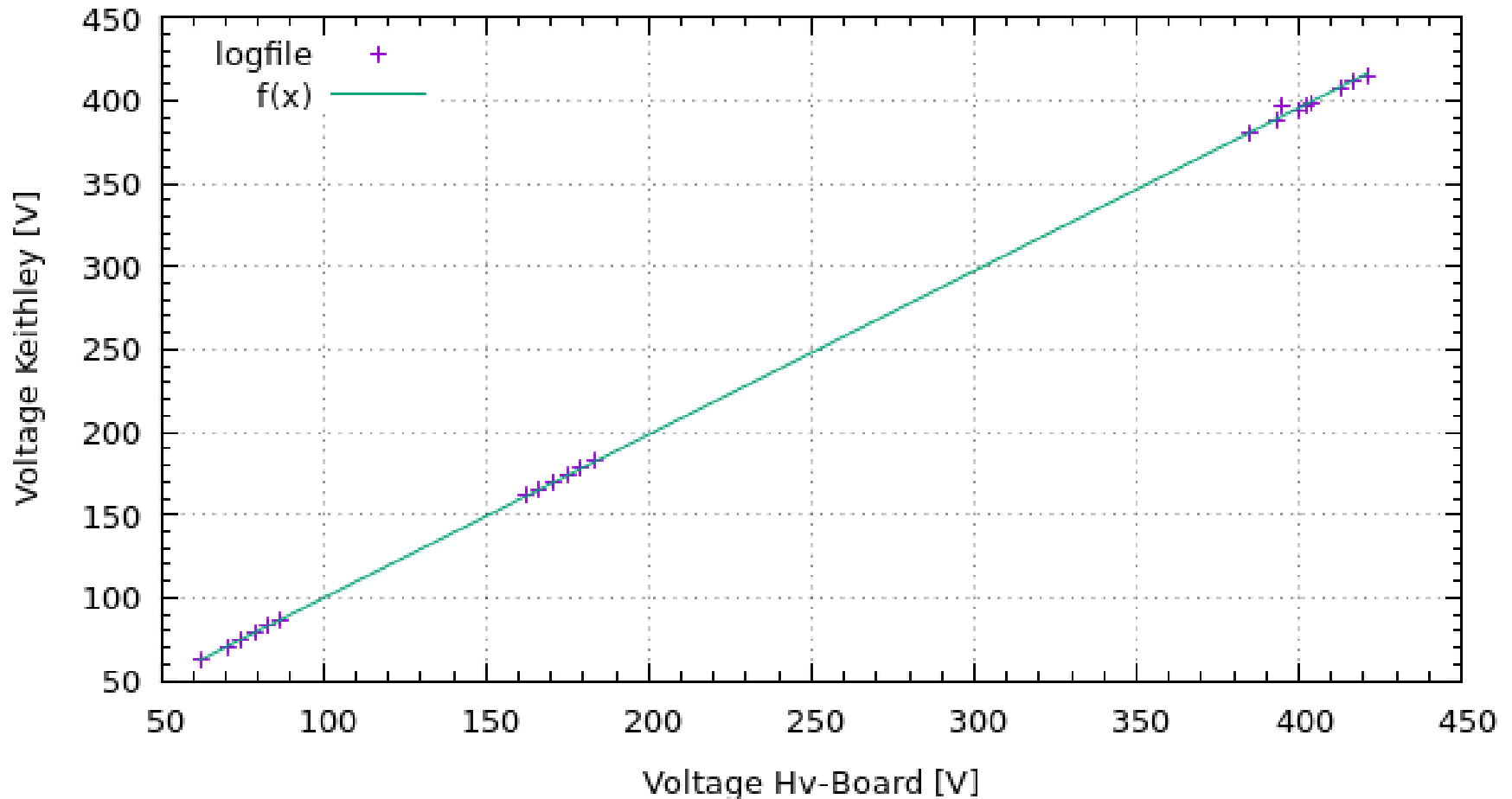
- Full tripple sandwich setup as test system
- System tests are undertaken under room temperature and at -25°C
- Verification of the voltage measurement was undertaken
- Impact of different DAC versions on resulting HV was studied



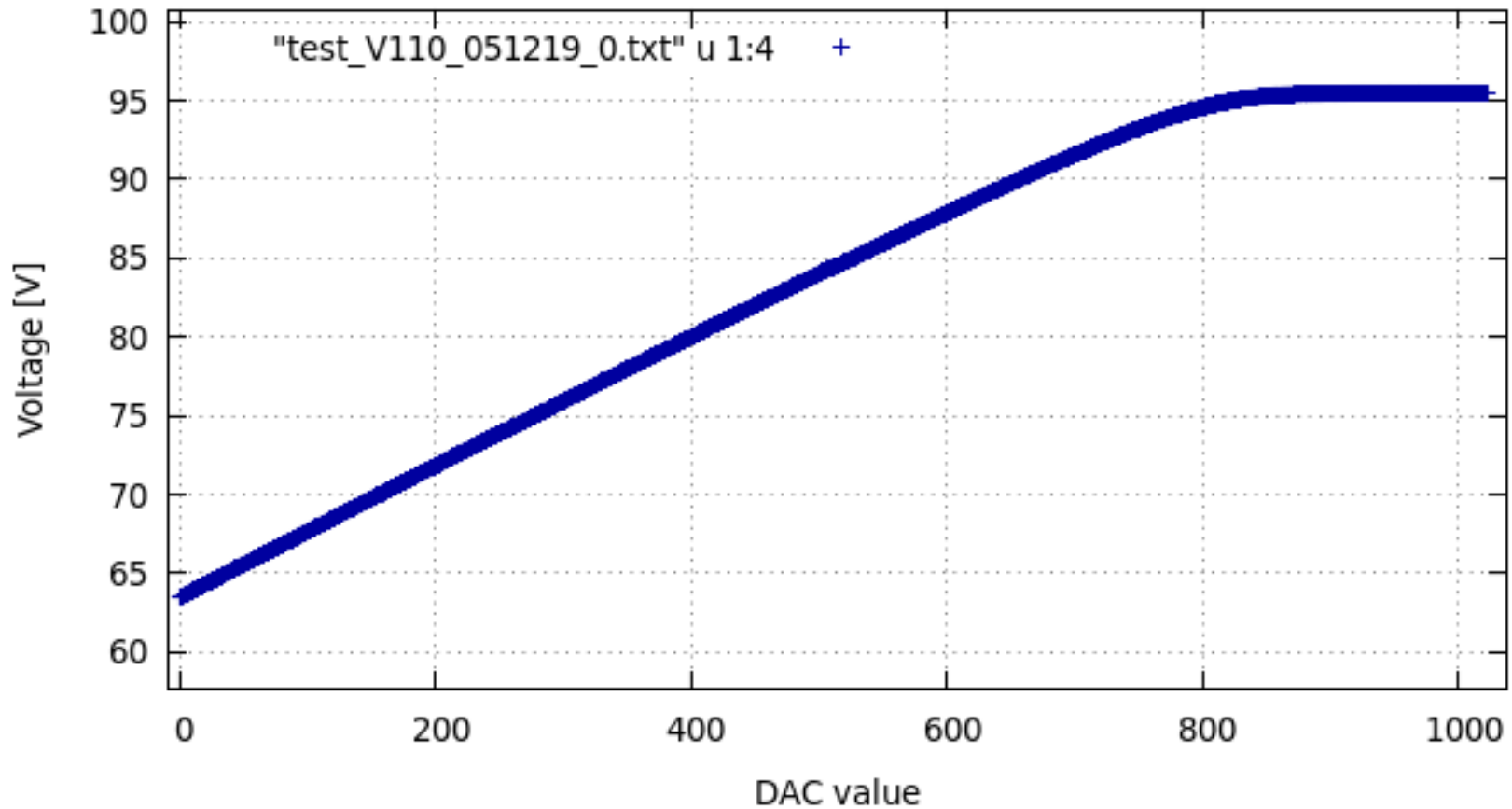
- Final prototype is currently in production
 - minor changes to the highvoltage regulation part and a decrease in size
- Both chipversions V100 (old) and V110 (new) are foreseen for last tests before serial production

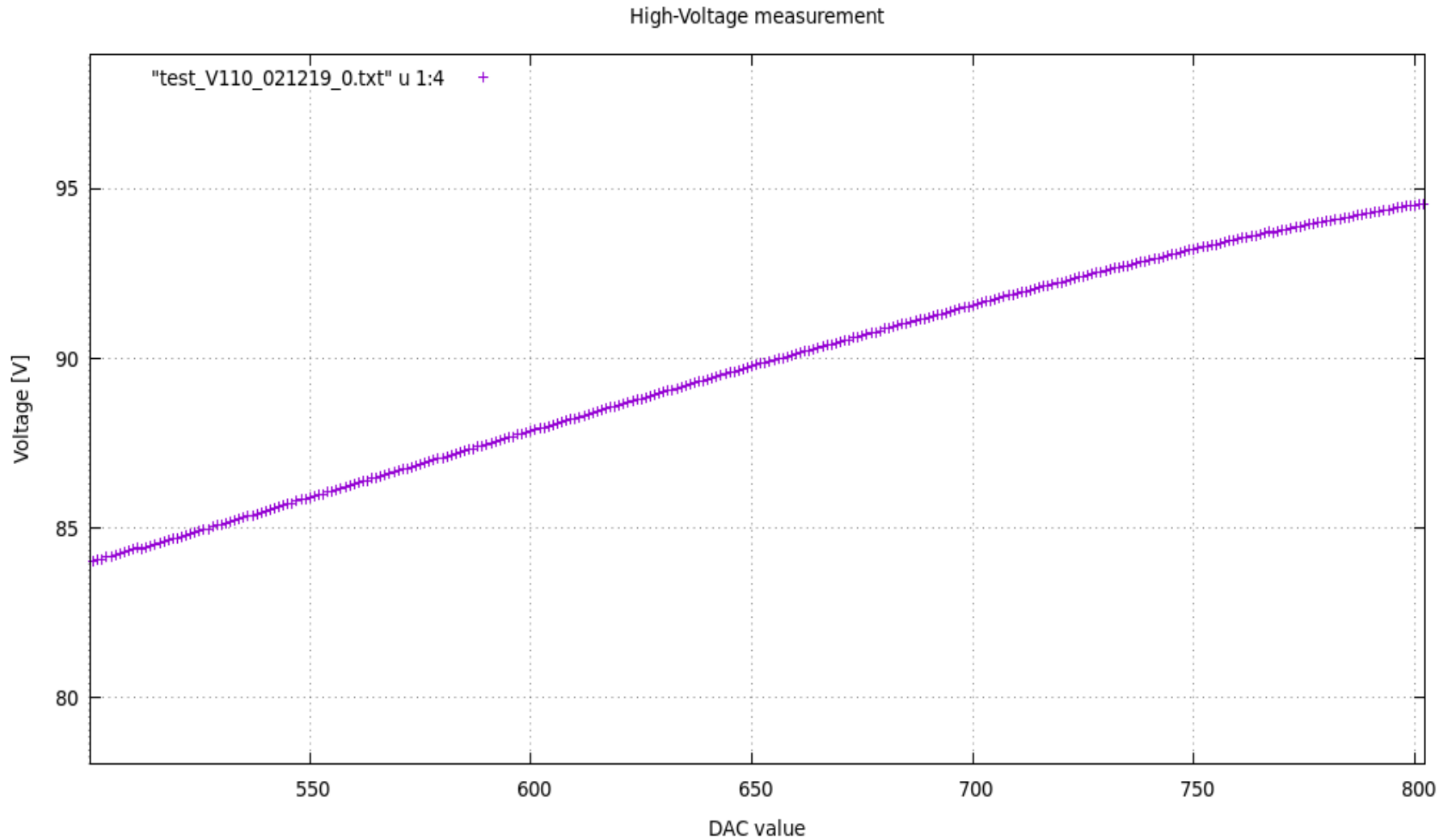


Voltage comparison between onboard- and external measurement

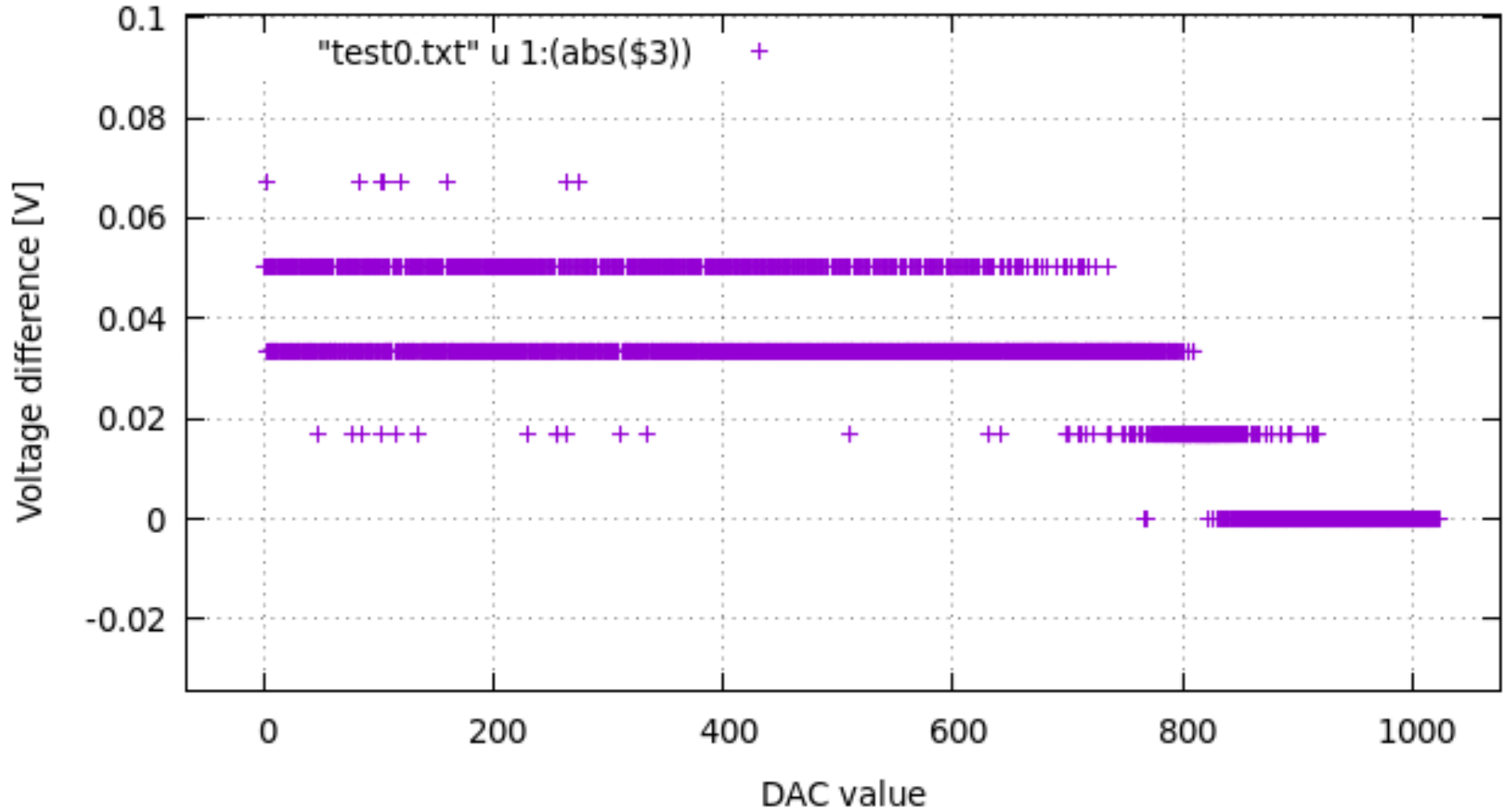


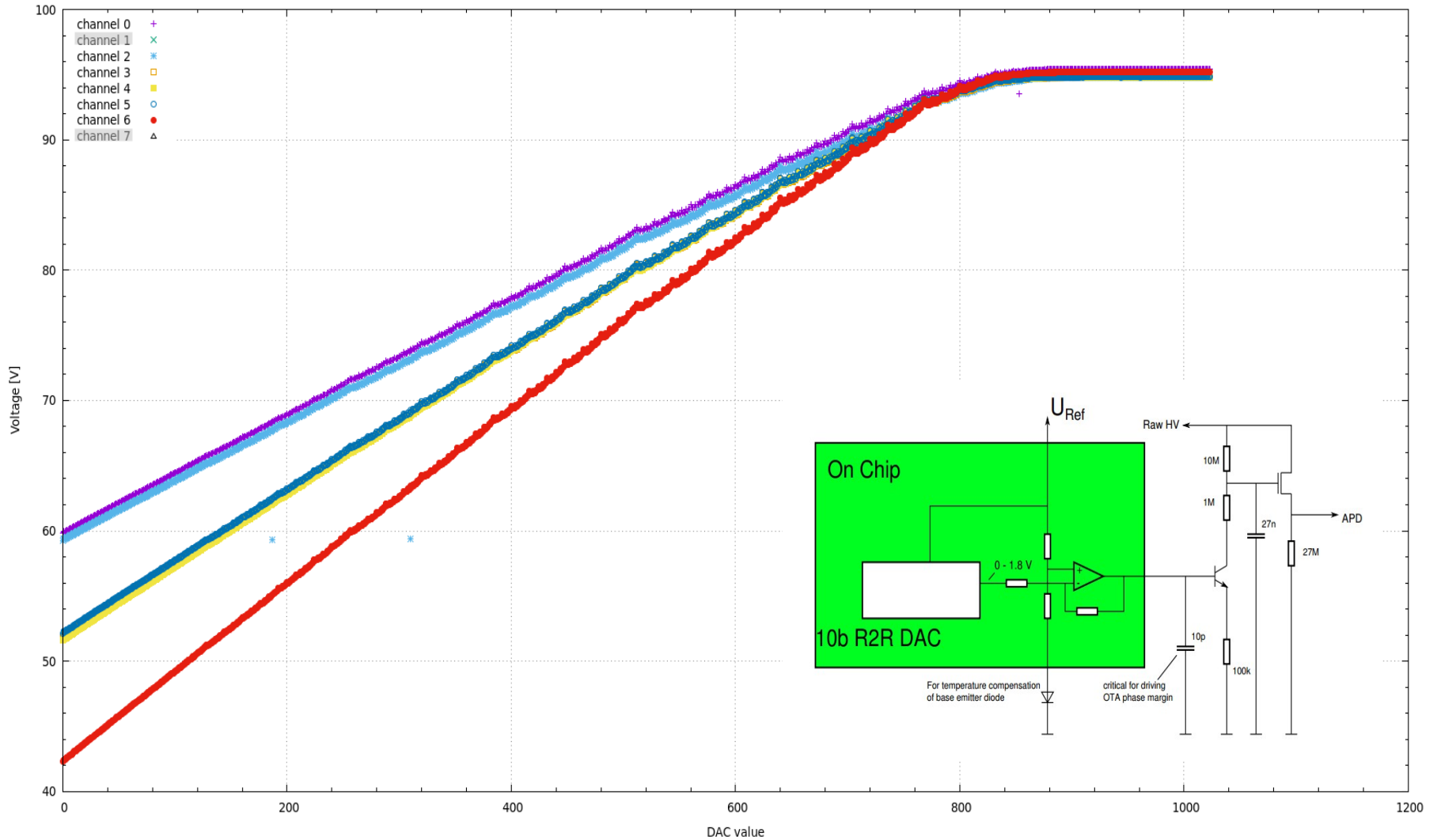
Voltage measurement of the High-Voltage-Distribution Board Chipversion V110



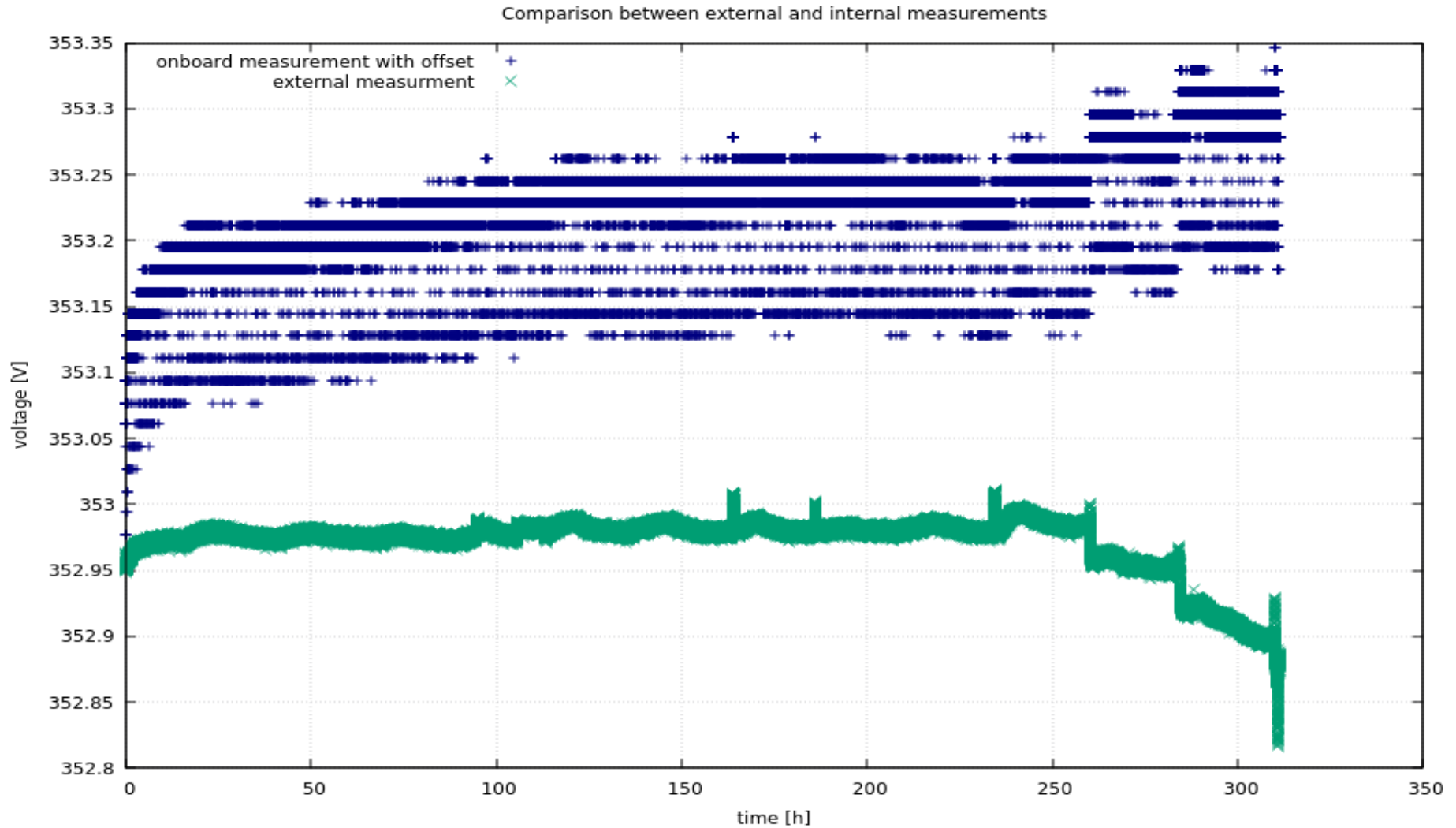


Absolute differences between successive datapoints - V110



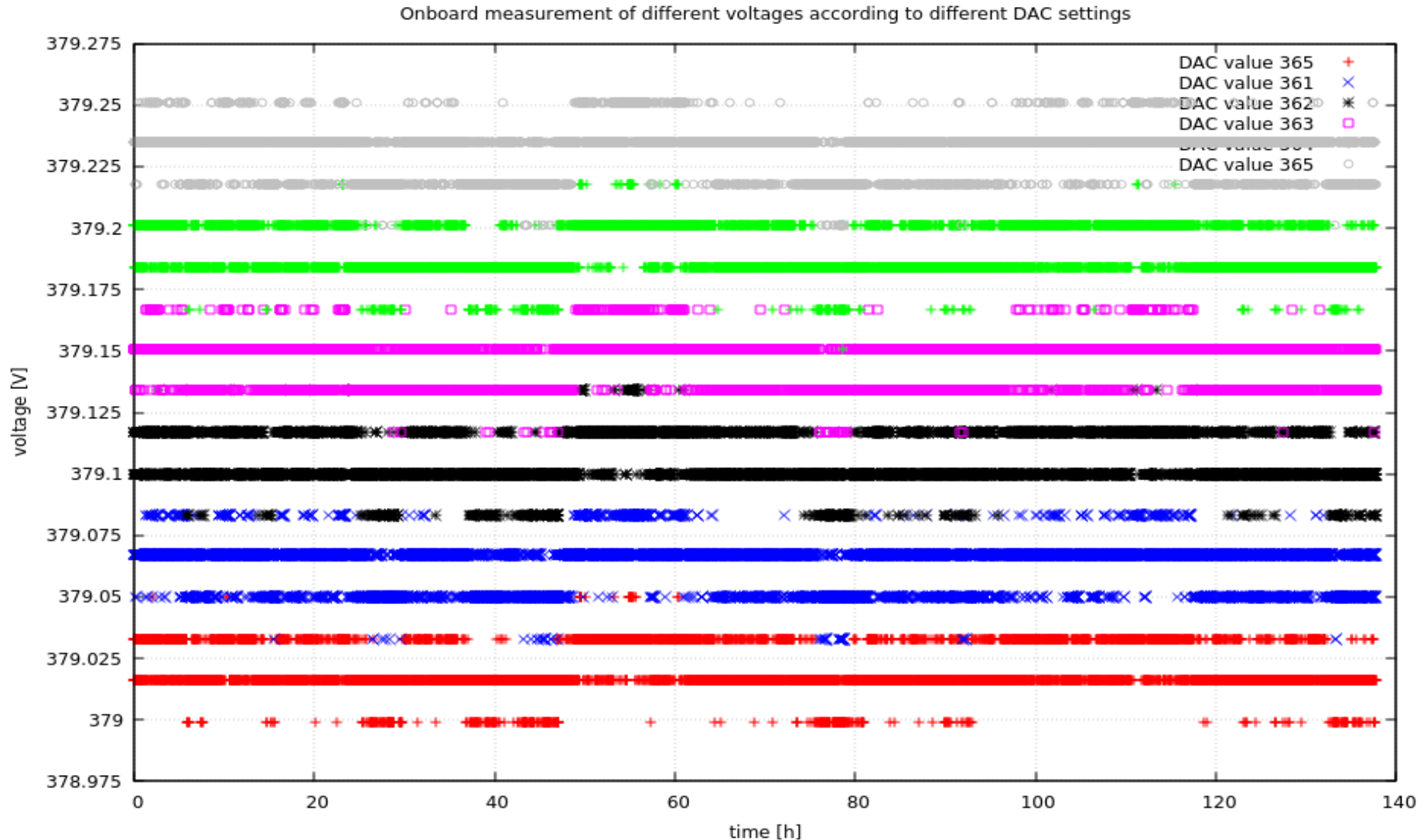


Detailed comparison between external and onboard measurements



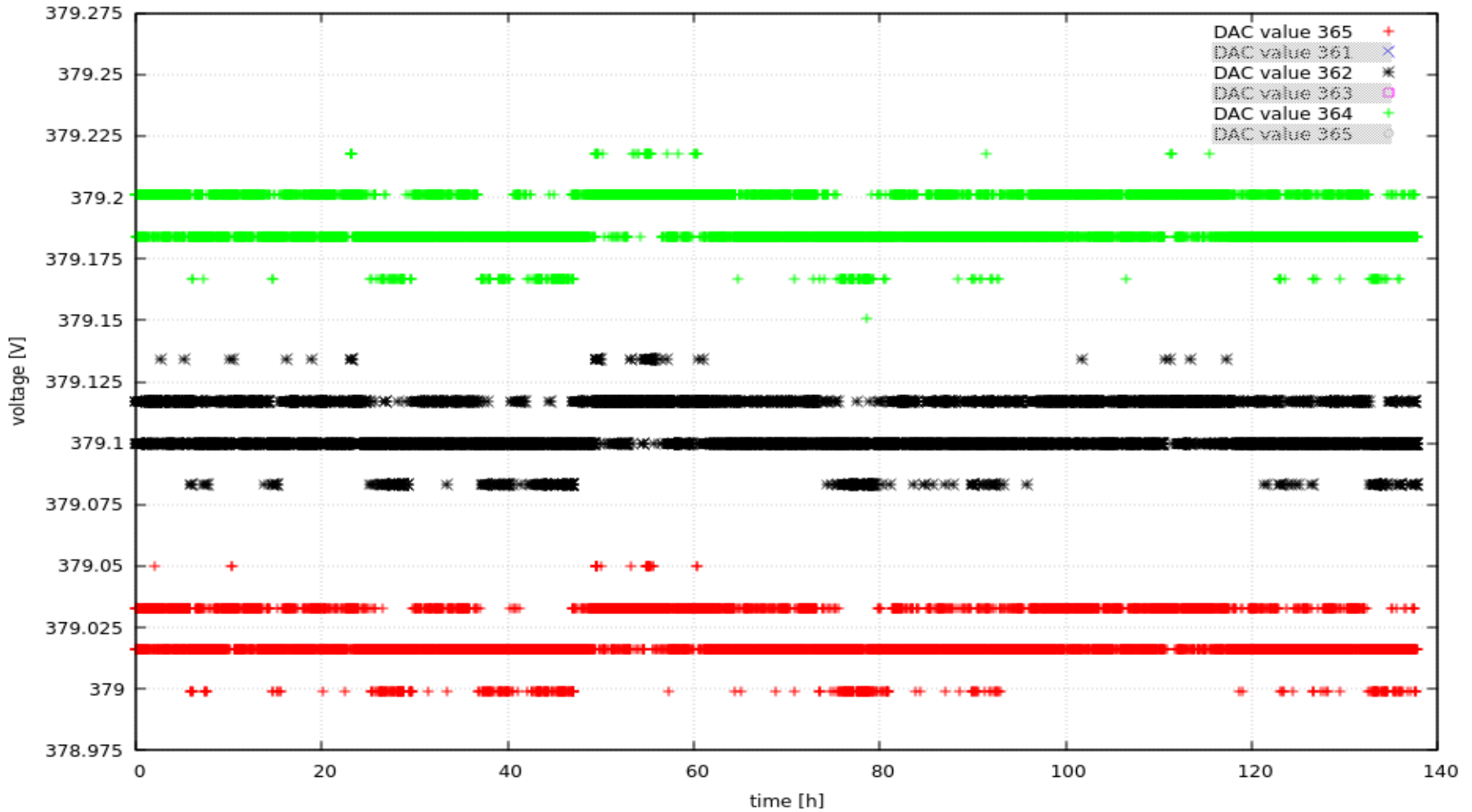
- **Drift of the ADS1115 measurements can be observed**
- **Time constant of the drift in the order of 100h**
- **Temperature changes at ~260h and ~280h by 5°C**
 - **change of high-voltage can be observed in both measurements**
- **Some deviations between successive measurements of the ADS1115**
 - **iterate over several measurements to add statistics**

Detailed comparison between external and onboard measurements



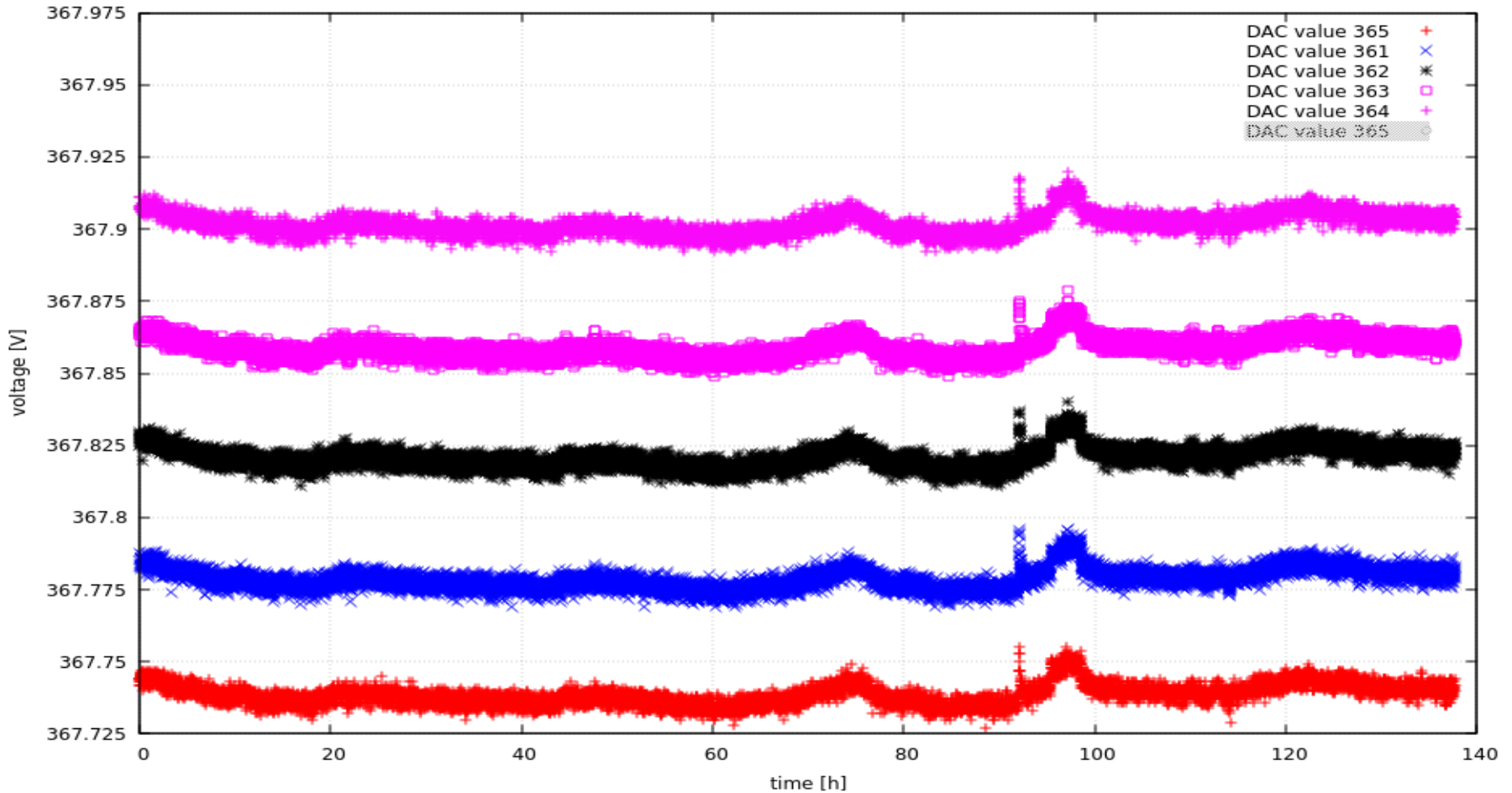
Detailed comparison between external and onboard measurements

Onboard measurement of different voltages according to different DAC settings



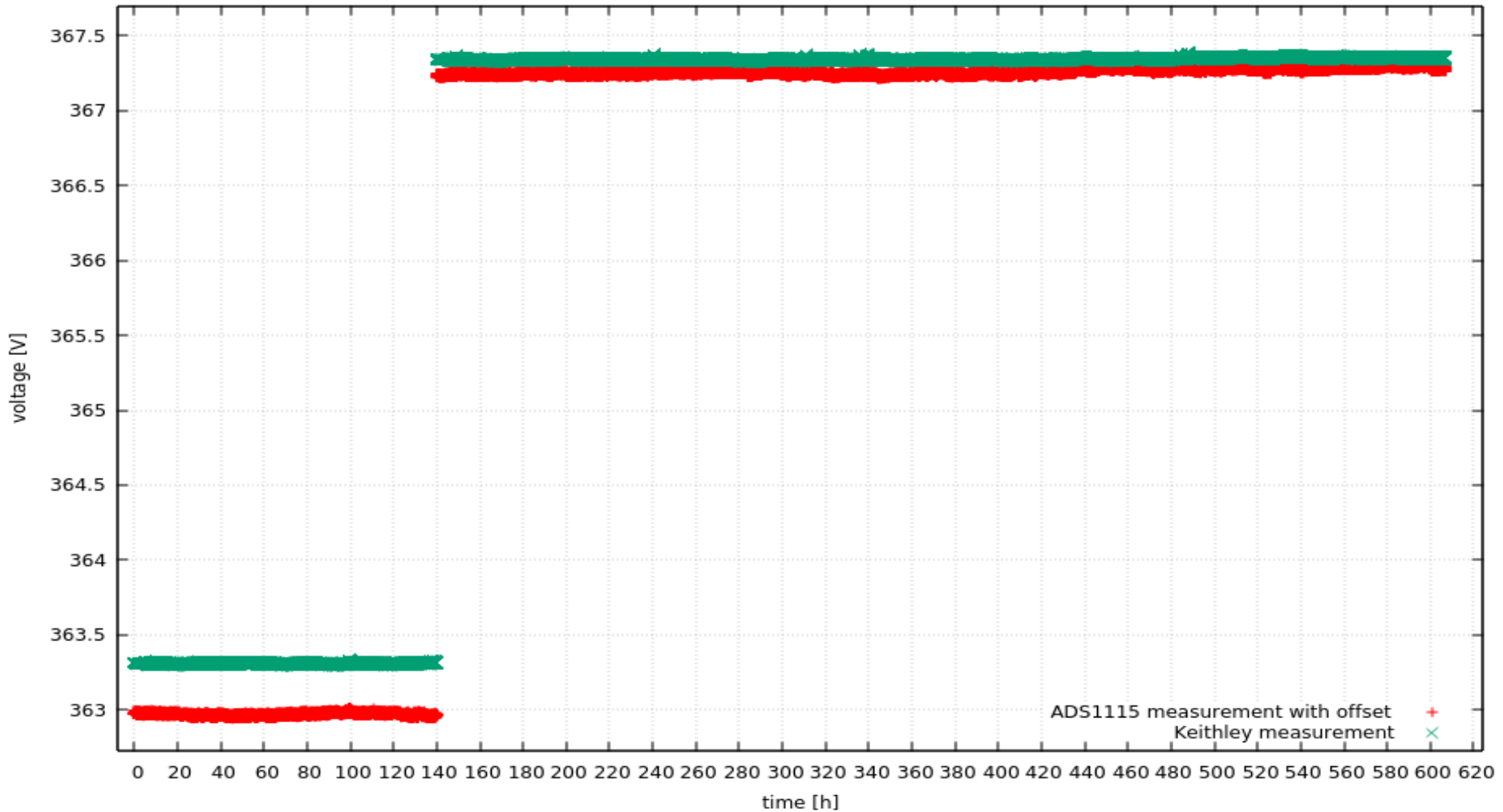
Detailed comparison between external and onboard measurements

External measurement of different voltages according to different DAC settings

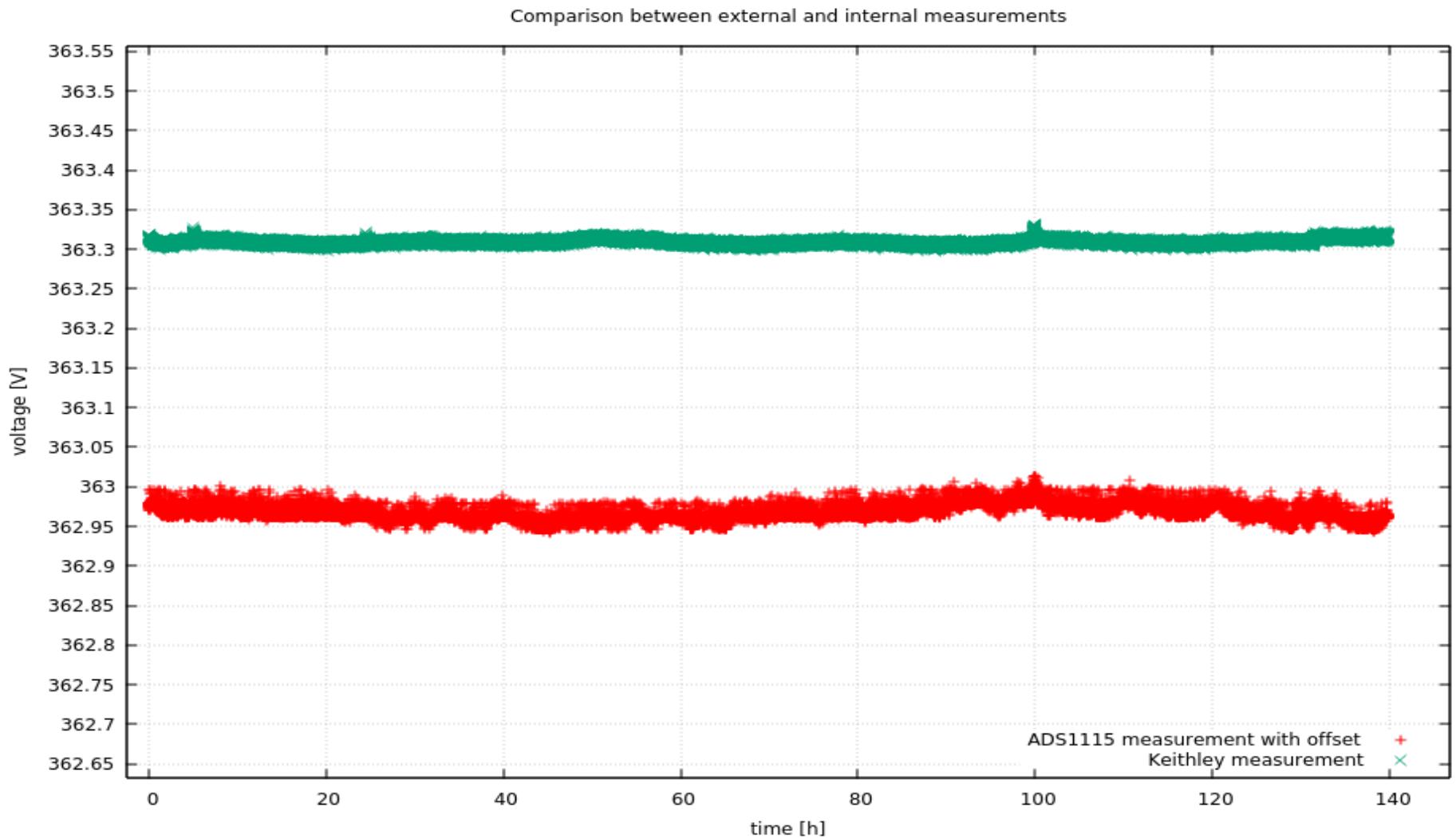


Detailed comparison between external and onboard measurements

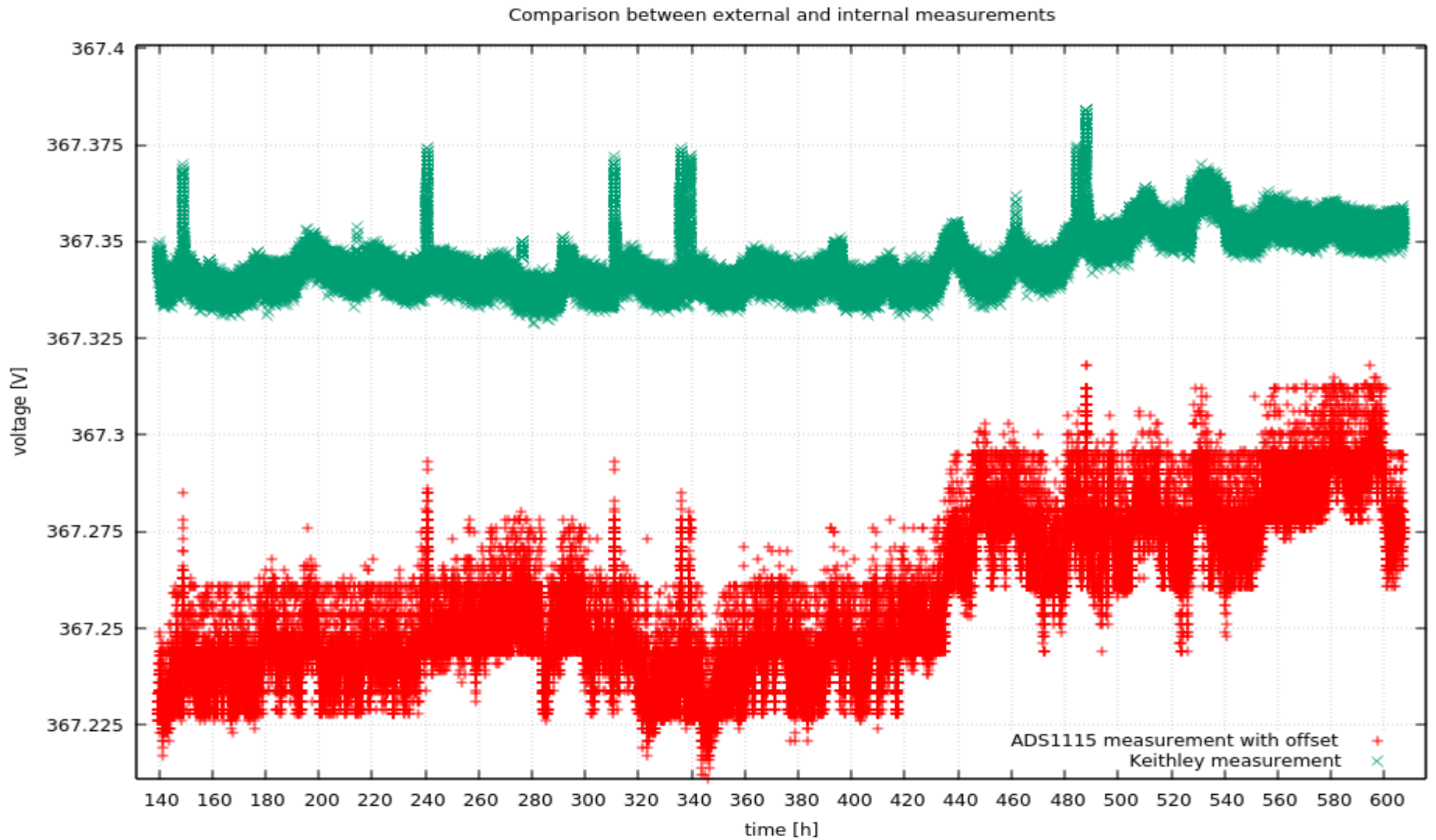
Comparison between external and internal measurements



Detailed comparison between external and onboard measurements

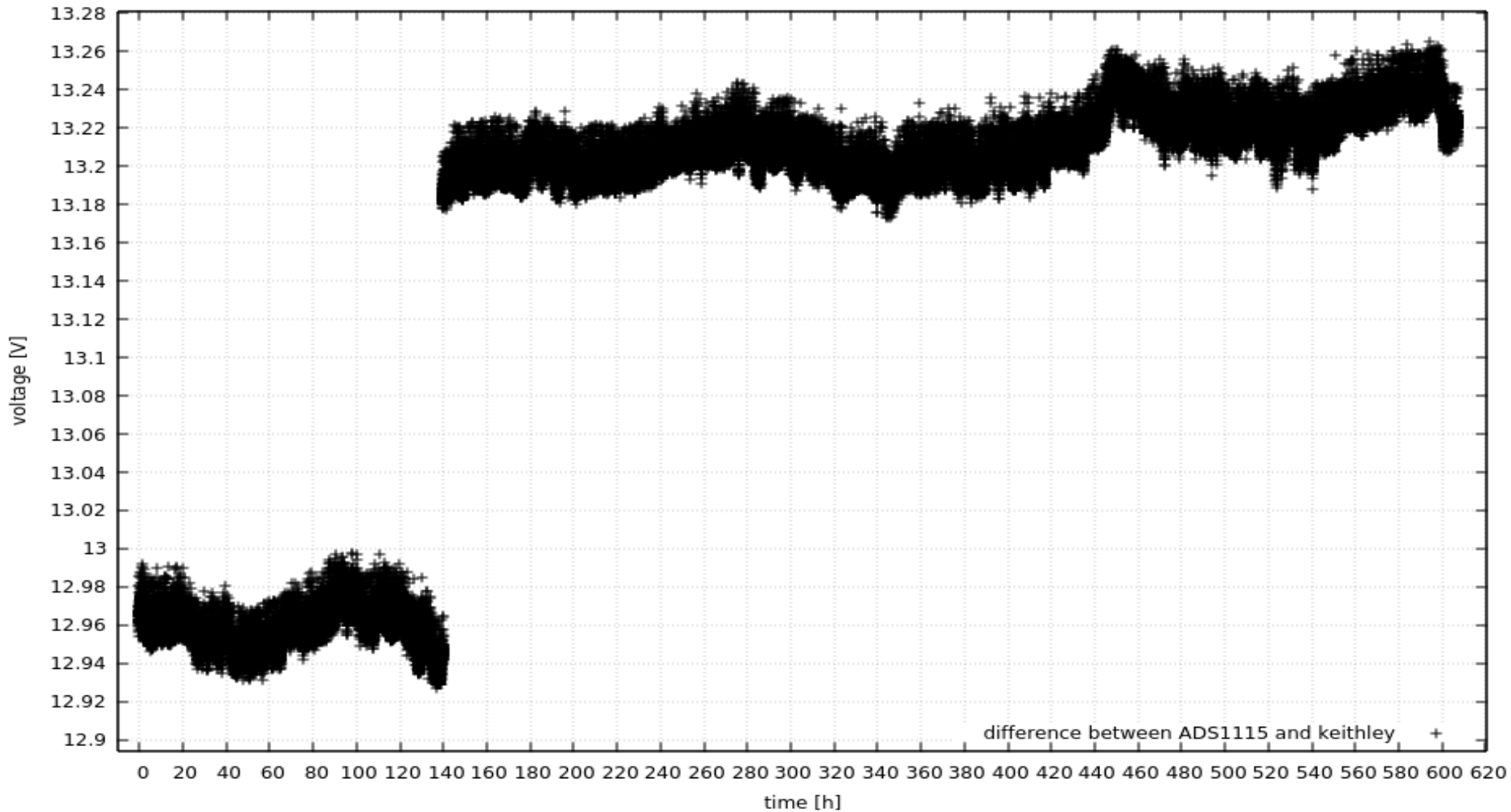


Detailed comparison between external and onboard measurements



Detailed comparison between external and onboard measurements

Comparison between external and internal measurements



- **PCB was decreased in size**
- **HV board is currently in preproduction test**
 - **end of the year all tests should be completed**
- **ADS1115 HV measurement shows a drift in the order of ~100h**
 - **maybe dielectric absorption of some onboard capacity**
 - **changes are already included in last prototype and will be studied this year**
- **Successive ADS1115 measurements show some deviation**
 - **iterate over several measurements to increase statistics**
- **Packaging of 190 SAA V110 already ordered (sufficient amount for the first slice)**
- **Production of remaining SAA chips foreseen for december**
 - **packaging next year**