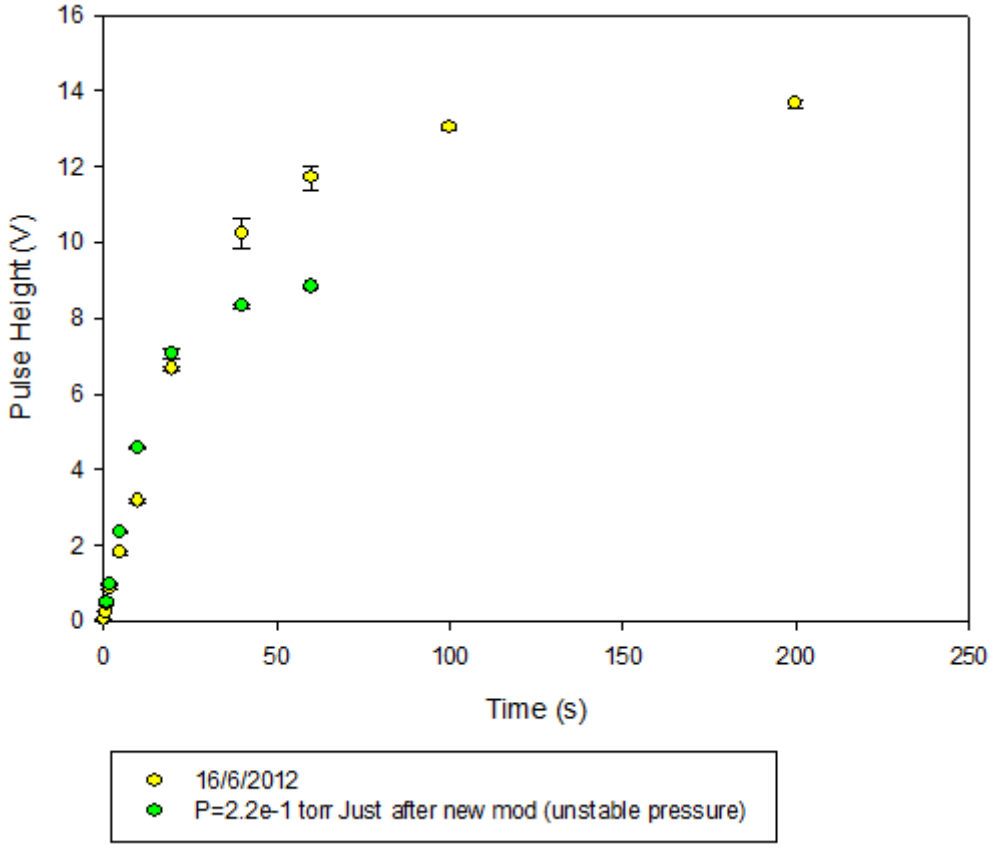
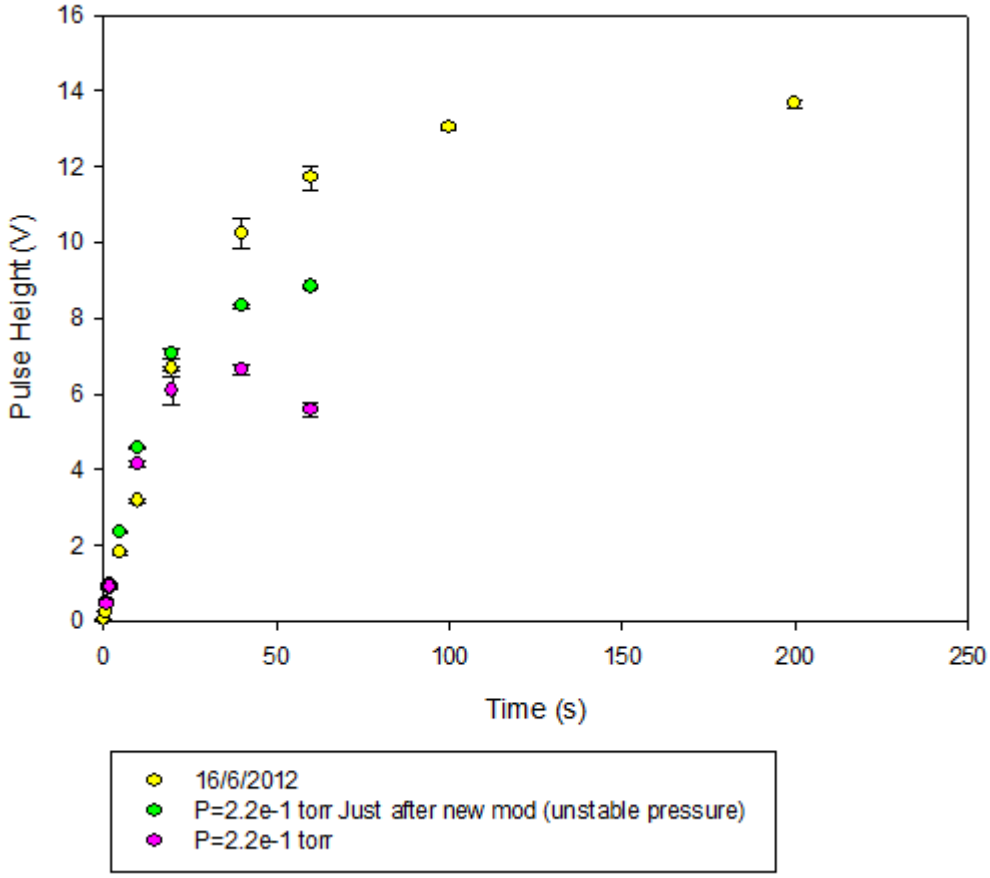
Dear All,

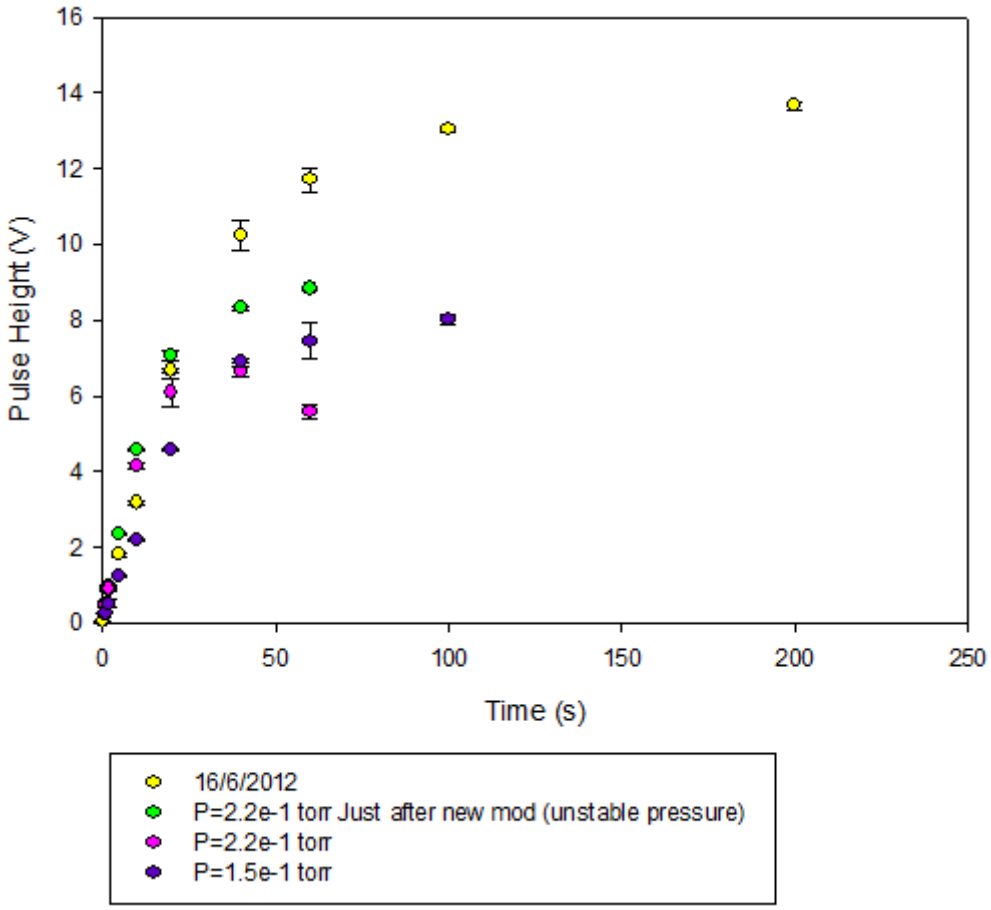
Today, has been a day of interesting results. My first priority was to reproduce the large pulse heights observed previously, as I have said before reproducibility is most important!
So I began with a measurement using the MCP and observed the following (green points are today's data):



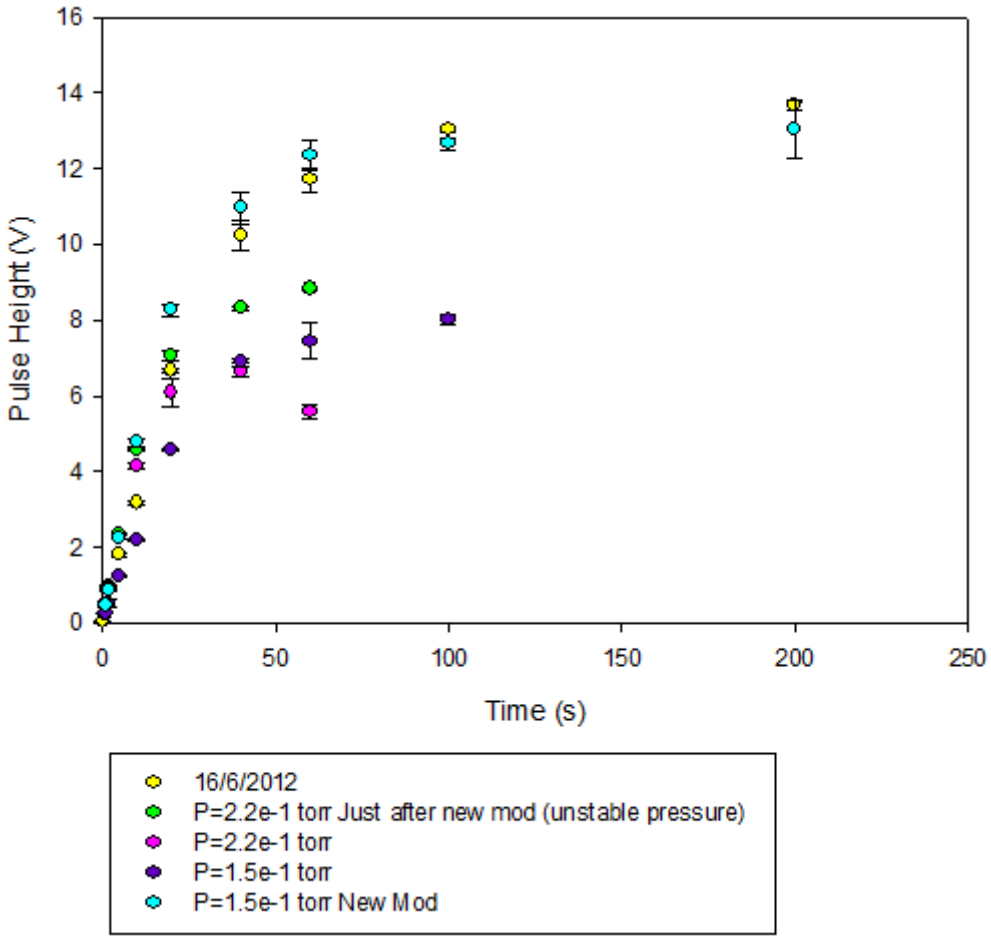
Checking the pressure, it had decreased so I assumed that this was the problem, reset the valve and continued. The next measurement (shown in pink in the plot below) was somewhat confusing as it appeared that the lifetime was limited to 40s with a decrease at 60.



I decided after some investigation to lower the pressure to ~1.5e-1 torr in the N2 reservoir, which yielded something not limited in lifetime but a little lower in magnitude (purple points in the plot below)



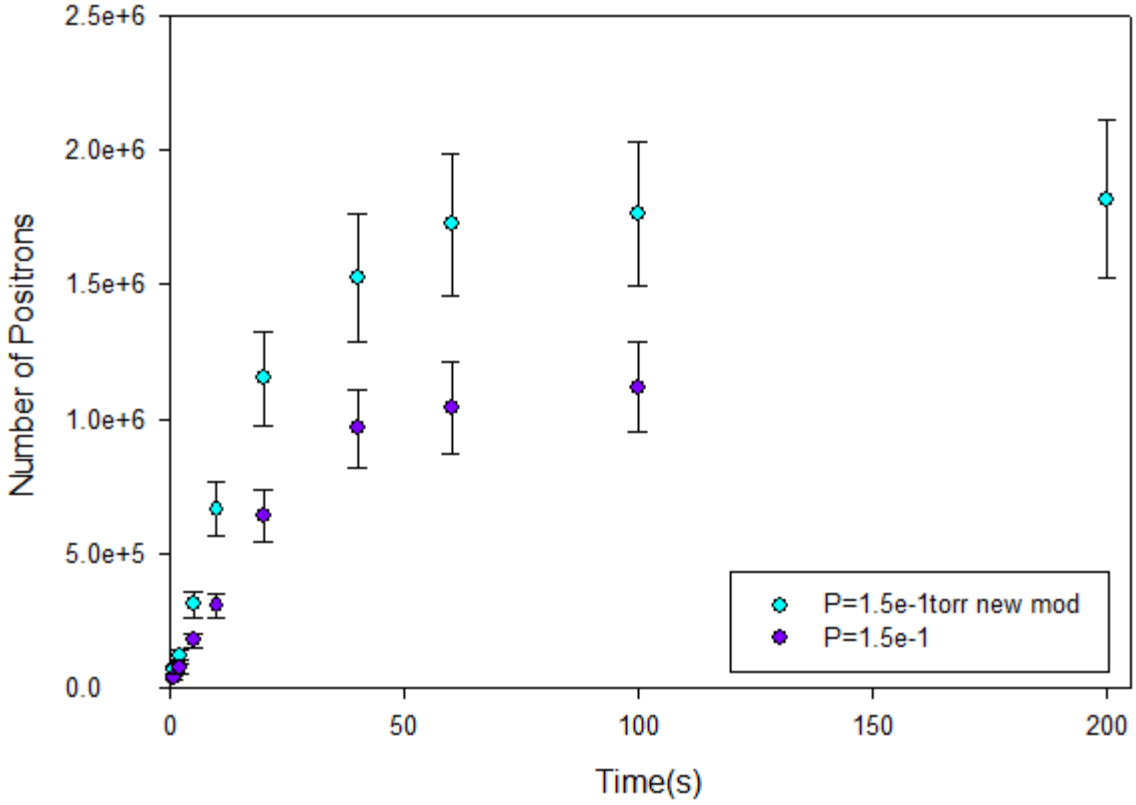
I've been noticing an increased pressure rise around the moderator since the lead block has been fully removed (I guess it was also acting as a pumping aperture), so with the new low pressure I decided to try a new moderator. The results at 1.5e-1torr with a new moderator are shown in the plot below in light blue points.



There is now a good agreement between the yellow and light blue points. The measurement of the yellow points did end at a lower pressure than usual, however, I perhaps wrongly assumed that the pressure change was minimal during the experiment. Certainly the pink points would suggest that the the behavior is closer to that of 1.5e-1 torr in the N2 reservoir. I intend to investigate the process of admitting gas into the system a little tomorrow, I want to know how long it takes to stabilize to try to further understand these results. I am a little concerned about the effect of N2 on the moderator now, I assume these effects are becoming more noticeable as more of the beam is trapped. This effect can be monitored by repeating say a 60s accumulation and watching how the number extracted to the MCP changes over time.

Although reproducibility is observed at this point, stability becomes my priority.

One final figure, using my previous calibration between MCP pulse height and number of positrons the measurements at 1.5e-1 torr before and after the new moderator are shown below in term of number of positrons.



As always comments, questions and suggestions welcome!
Kind regards
Dan

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