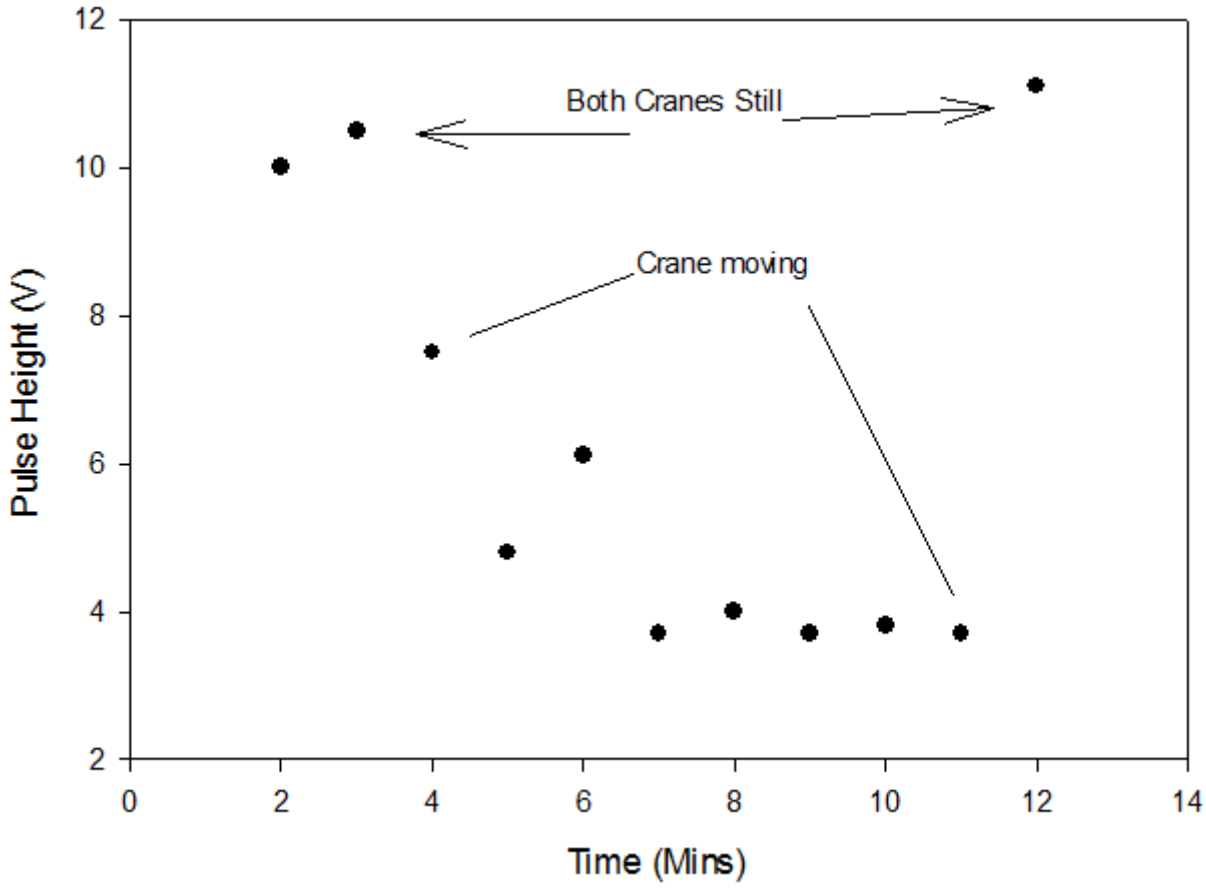
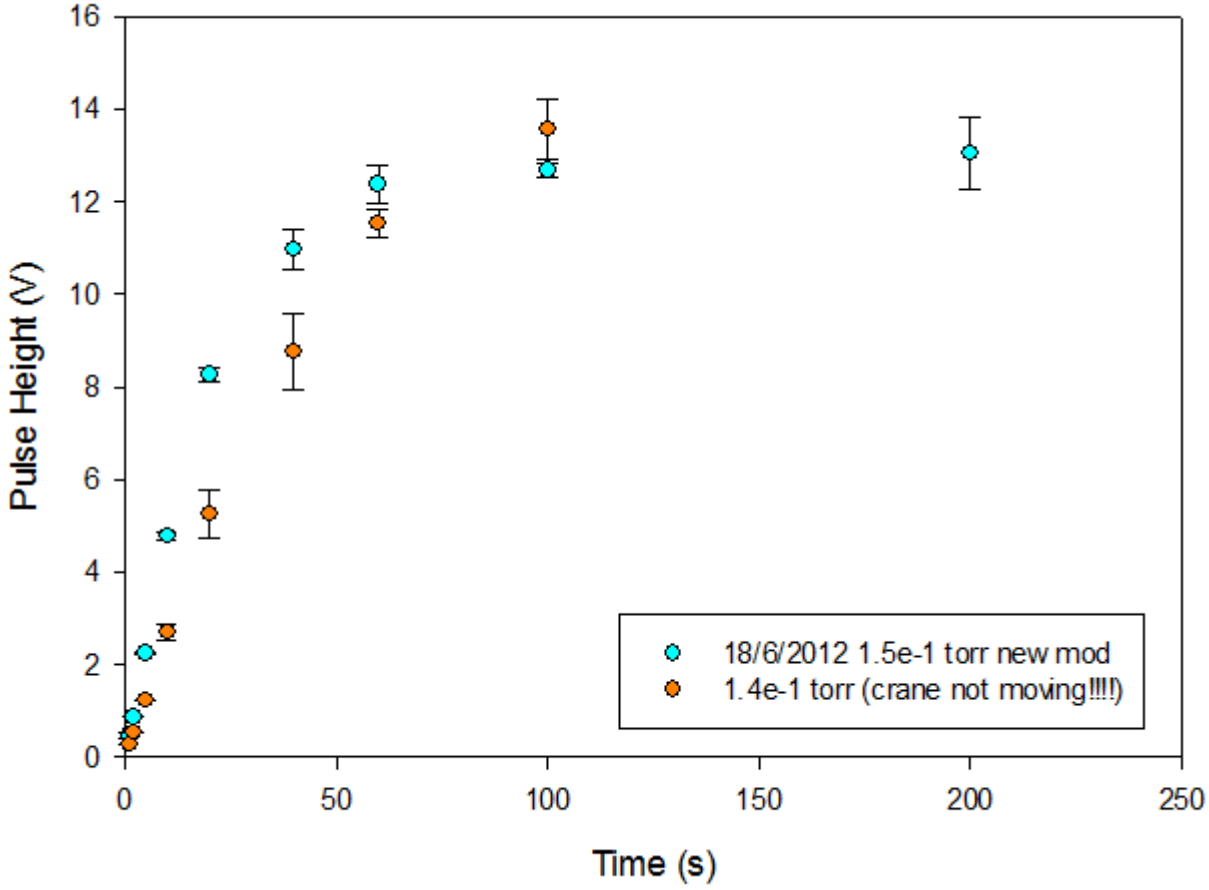
Dear all,

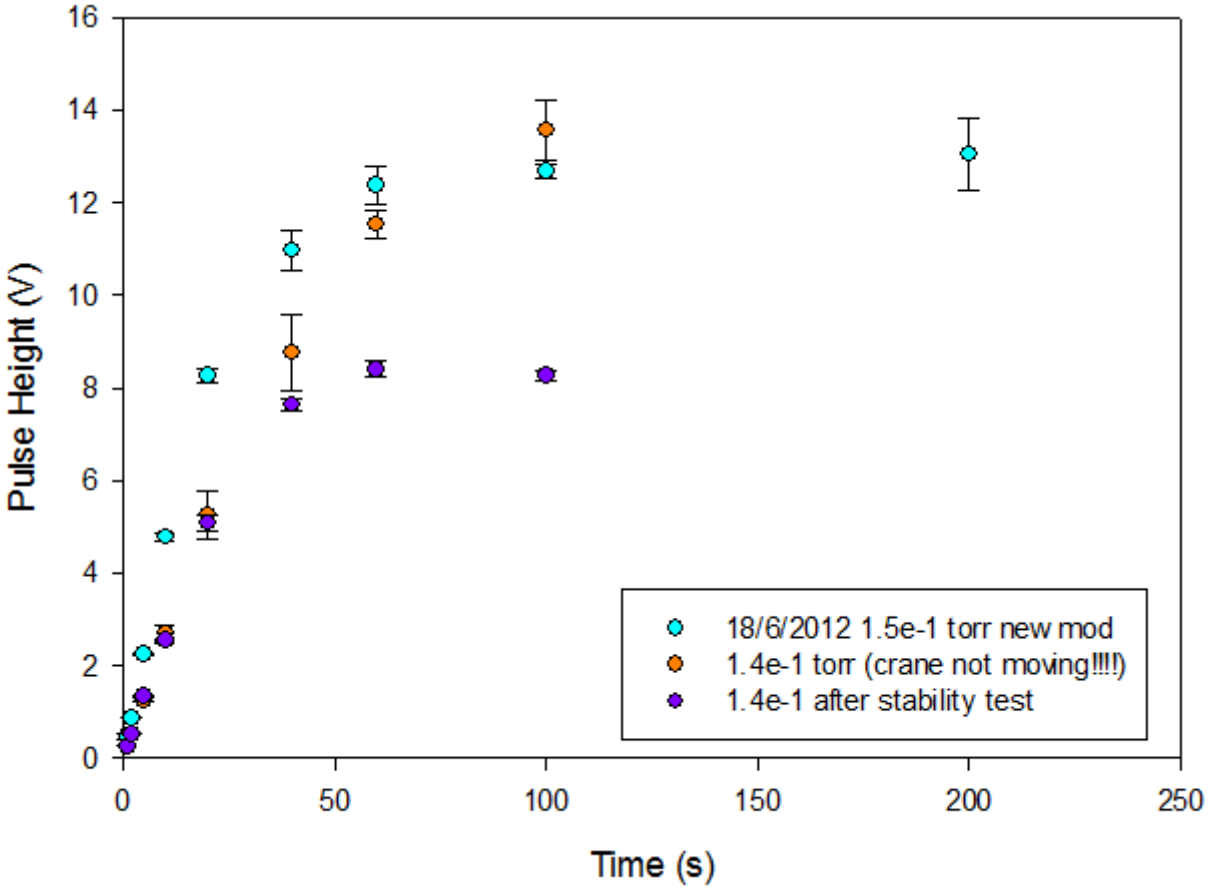
Today was another interesting day for the positron system, although the constant use of the crane by ALPHA to install their new platform system was 'problematic' to say the least. We have observed instability in the DC beam caused by the crane moving and lowering it's hook and I can report that this instability is also observed while trapping (which one would expect). The figure below gives you some idea of the effect!



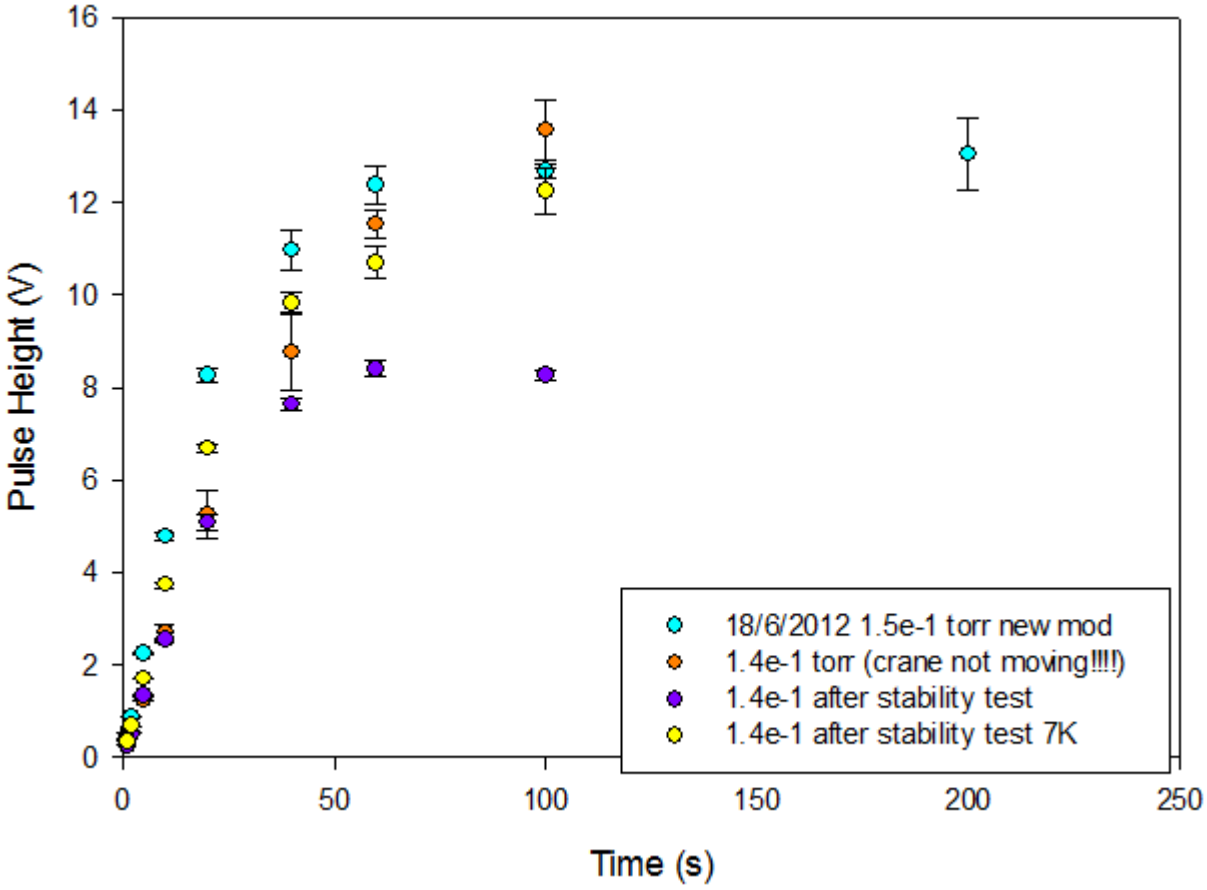
However, after many aborted attempts to reproduce the curve measured yesterday at 1.5e-1torr in the N2 reservoir (it's quite difficult to judge when the crane is in the same position to reproduce conditions). I managed to measure up to 100(s) with a pressure of 1.4e-1torr



After reproducing a similar result, I assume that the slower rise at shorter times is due to the slightly lower pressure, I checked the stability of pulse height at 60s. In a period of 2 hours, the pulse varied little in the first 30 minutes then slowly decreased to ~8V. A measurement of the lifetime curve after this stability test is shown in the plot below (purple points)



As I was fairly sure this effect was due to the moderator degrading, I decided to try heating the moderator to 7K. With the moderator still at 7K I measured the yellow points in the plot below :



Which seem to return to the same values as the earlier measurement before the 2 hours exposure to N2 gas. At this point though, I don't know if this is reducing the impurities or annealing the moderator.

Now that the pressure has been lowered to ~1.5e-1 torr the reproducibility of the large MCP pulses appears much better, I had often observed that my first measurement of the day was thee highest, however, I had ascribed this problem to the moderator degrading quickly. However, it now appears that it may be due to a lower pressure during that initial measurement, the initial pressure change when the N2 reservoir is filled is fairly quick, however, it looks like reaching equilibrium may take a little longer (~minutes). This effect is still under investigation...

As always comments questions and suggestions welcome!
Kind regards
Dan

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