Subject: Chamber testing manual version 2
Posted by Rainer Schicker on Fri, 24 Dec 2004 13:52:07 GMT
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Version 2 of the chamber testing manual is available
at www.physi.uni-heidelberg.de/~schicker/trdtest/chamb_v2.pdf.
This version specifies the issues of version 1 raised by Harry
and includes the experience made in Heidelberg in testing
the chambers used in the oct beam time.

Subject: Re: Chamber testing manual version 2
Posted by Chilo Garabatos on Wed, 12 Jan 2005 16:21:49 GMT
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Dear Rainer and all,
I would like to send you some comments and remarks to the nice manual that you have taken the pain to write:
On the data logging:
Isn't it more convenient to log the data points in x y format rather than having to extract the x from a header? Data space is not a concern and one would have the flexibility to have non-equal time intervals, for example, in case a test is paused for any reason.
1.1 Hardware. Why not adding to the list picoammeters, preamps, CAMAC modules, HV supplies, O2 sensor, P, T sensors, etc.
1.3 Gas mixture. For my understanding: is there a resistor before the drift electrode?
3. Leak rate measurement. The way we did it for the TPC ROCs was to flush the chambers at high flow and record the O2 until it plateaus; then it is not needed to make any fit. Then we would decrease the flow while testing in order to save gas -and giving additional information about a new O2 value to cross-check for consistency. This requires that the mass flowmeters are equally calibrated at both flows.
I think the disgression about the maximum leak rate is not the correct one. We have agreed that what hurts us more is the money in Xe lost, not the O2. The official maximum leak rate has been set to 10% of the total TRD volume lost per year, which means 1 mbar*l/h.
On the O2 sensor cell: in ~3 years of ROC testing we never had a problem until the penultimate chamber: for some reason the cell inflated and the membrane blocked the gas passage through the sensor cavity, producing a large overpressure which would certainly be fatal for a TRD chamber. Therefore we decided to put a safety bubbler at the exhaust, in parallel with the O2 sensor.
4. Chamber conditionning. I would like to express my surprise about the large currents observed in some chambers. I also don't like the idea of applying reversed voltages to the electrodes. Are the wires blowed with dry N2 or CO2 just before closing the chambers?
5. Gain curve. Again: I would aim at measuring the true gain, not just the currents. I think Rainer managed to read a preamplifier connected to the anodes, so then one just needs to record the counting rate as well. And by the same token one can record a little Fe55 spectrum for the energy resolution.
For the TPC we were concerned about the stability and we specified up to which value the gain curve should go and at which gain the rest of the tests should be done. It is the gain what counts, not the voltage.
On the other hand, in the manual it is stated that the 'gain' curve is measured for 31 points. Isn't this a bit too much? And for a drift voltage of 1200 V; why so low?
Regards,