

Dch leak rate calculation:

$$P(t) = P_{atm} + P_0 e^{-t/\tau}$$

$$P(0) = P_{atm} + P_0$$

$$P(\tau) = P_{atm} + \frac{P_0}{e}$$

$$\frac{\Delta P}{P} = \frac{P_0 - \frac{P_0}{e}}{P_{atm} + P_0} ; \frac{P_0}{P_{atm}} \left(1 - \frac{1}{e} \right)$$

$$\frac{\Delta P}{P} = \frac{\Delta V}{V} \Rightarrow \Delta V = 0.63 \times V \frac{P_0}{P_{atm}}$$

Volume of the Dch: 5192 l

We take the leak rate at the standard drift chamber over pressure : $P_0 = 4$ mbar

We take τ from a fit of the over pressure

Leak rate = $\Delta V / \tau$

(A semi-automatic script is provided to do this calculation : see

<http://www.slac.stanford.edu/BFROOT/www/Detector/CentralTracker/controls/gas/>)

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