# $CO^2$ Leak Chamber Calibration update

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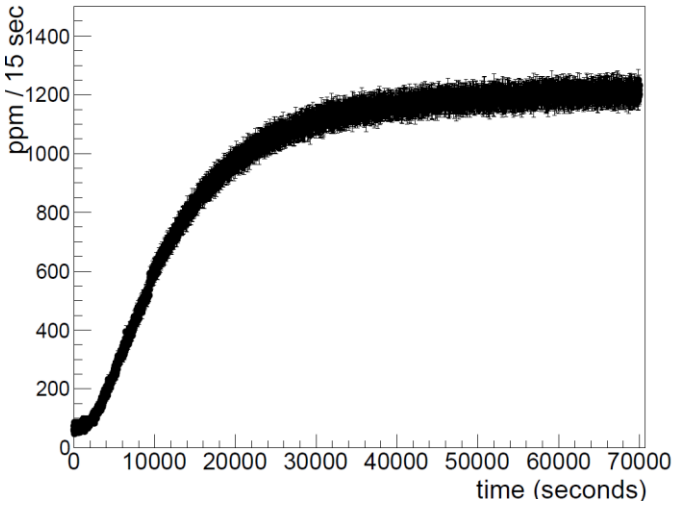
# Volume Measurement methods

$CO_2$ detectors measure in PPM.

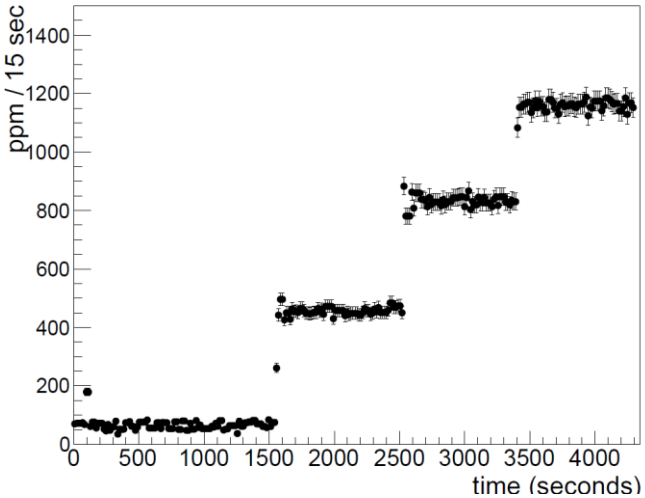
$$PPM = \frac{V_{CO_2}}{V_{chamber}} \times 10^6$$

1. Geometrical Estimate
2. Tygon Tube leaking
3. Injection Method

Tygon Tube Leaking



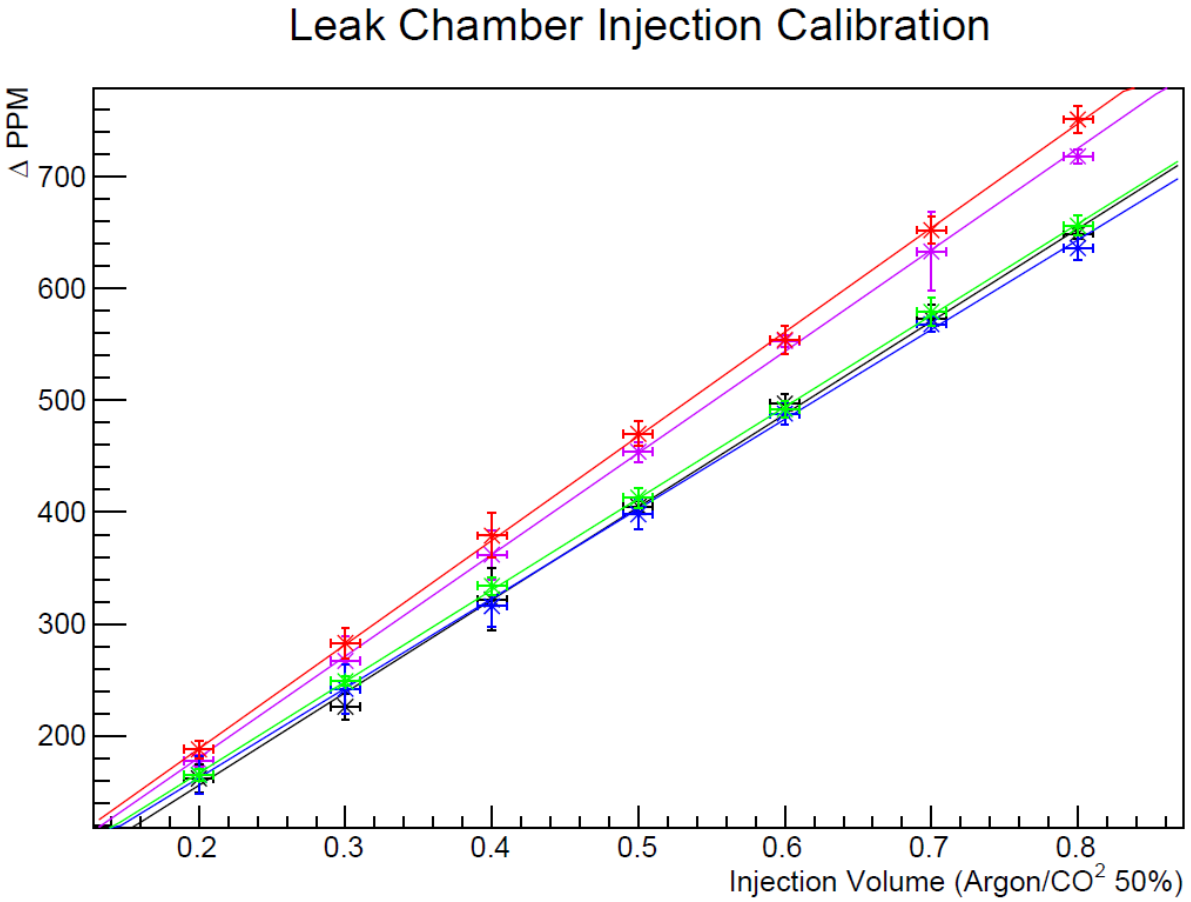

Injection Method



# Injection Method

Took 3 measurements for each injection amount.

Injection amount from .2 cc to .8 cc at .1 cc increments.




Sharper slope means less volume in chamber.

# Results

| Chamber | Geometric | Tygon Tube | Injection |
|---|---|---|---|
| 0 | 572 ± 35 | 569 ± 28 | 595 ± 18 |
| 1 | 572 ± 35 | 582 ± 15 | 617 ± 24 |
| 2 | 544 ± 35 | 555 ± 19 | 604 ± 16 |
| 3 | 549 ± 35 | 494 ± 5 | 530 ± 16 |
| 4 | 554 ± 35 | 481 ± 20 | 544 ± 15 |

Chamber 2 reads high compared to geometric estimate.
Tygon Tube method is consistently lower than the Injection method.