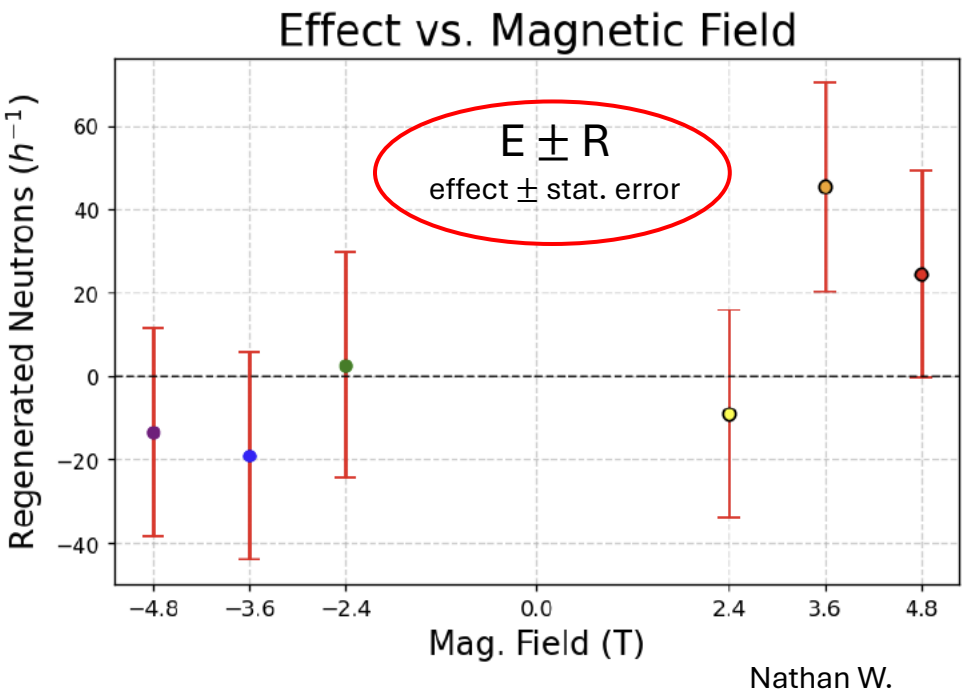
How accurate we need to know neutron intensity for 2024&2021 data?

As an example, Nathan's data of 2024



Nathan W.

Here effect is per hour, therefore Intensity should be also considered per hour. However, the unit also can be per second.

Suppose intensity is determined as

$$A \pm \delta \quad \text{, e.g. } \delta/A = 0.3: \quad 0.7A < A < 1.3\,A$$

Both Effect (E) and its Error (R) are divided by intensity in order to define the effect per neutron →

$$\frac{E}{A} \pm \frac{R}{A}$$

If intensity A is known with $\pm\ \delta$, then both the effect and its error are equally affected. Since our result requires upper limit of probability per neutron, we should have

$$\frac{E}{A-\delta} \pm \frac{R}{A-\delta}$$

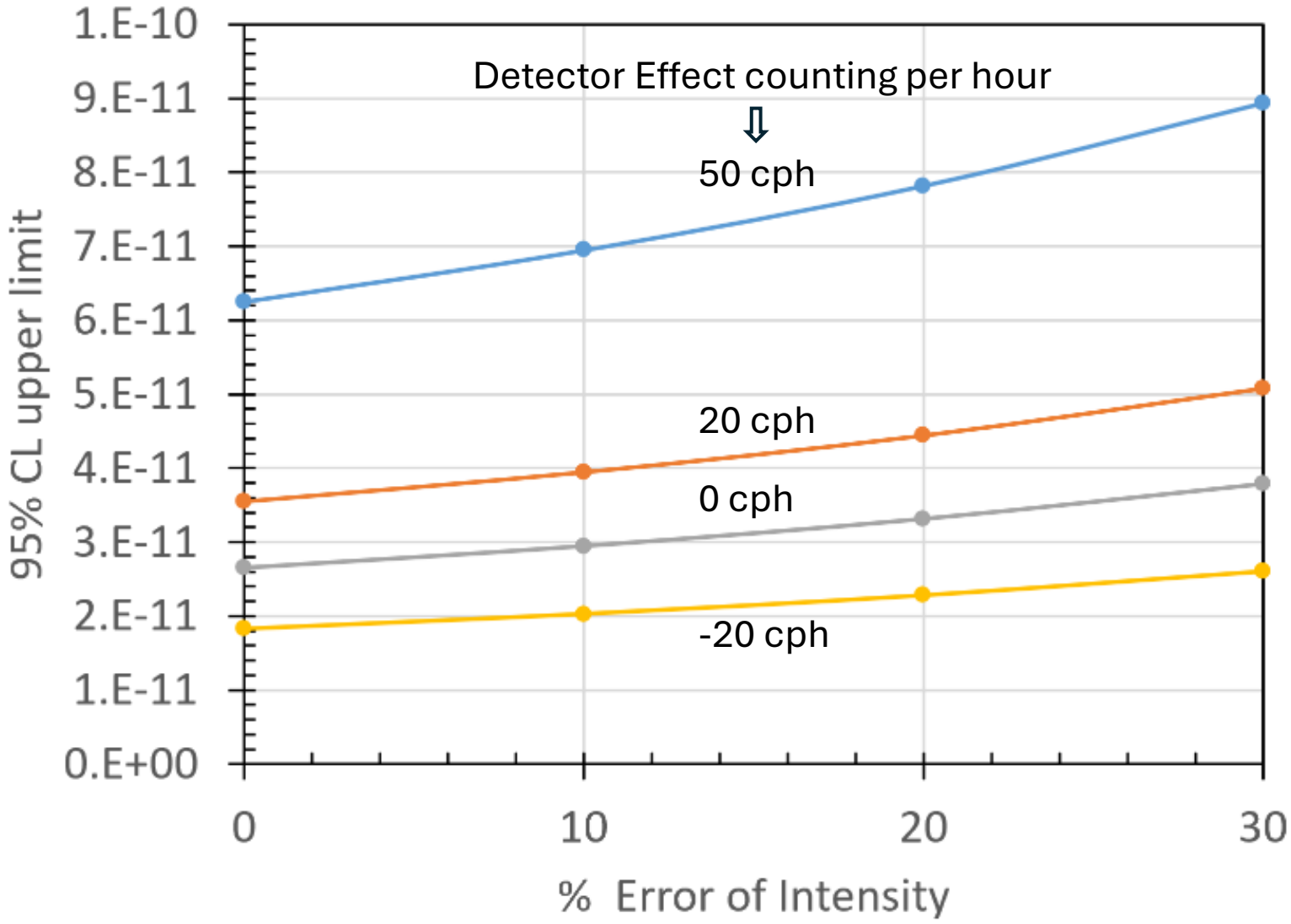
In terms of Feldman-Cousin's probability table

$x_0 = E/R$ and $\sigma = R/(A-\delta)$

will define C-F 95% upper confidence level as C

$$95\%\ \text{Limit} = C \cdot \frac{R}{A-\delta}$$

How C-F 95% CL Limit depends on the error of intensity determination



Our reasonable goal for the error of intensity is $\leq 10\%$