Mott Analysis Update

On the wiki there is....

https://wiki.jlab.org/ciswiki/index.php/Mott_Publication_Working_Area

- Run I and II Asymmetry and Rate tables
  - “dilution” subtracted, energy cut from -0.5 to +2 sigma, ToF cut from -2 to +2 sigma
  - 0L02 BCM settings given
  - Best Thickness data given
- A v T, R v T, and A v R plots with Pade fits for both runs and table with fit parameters

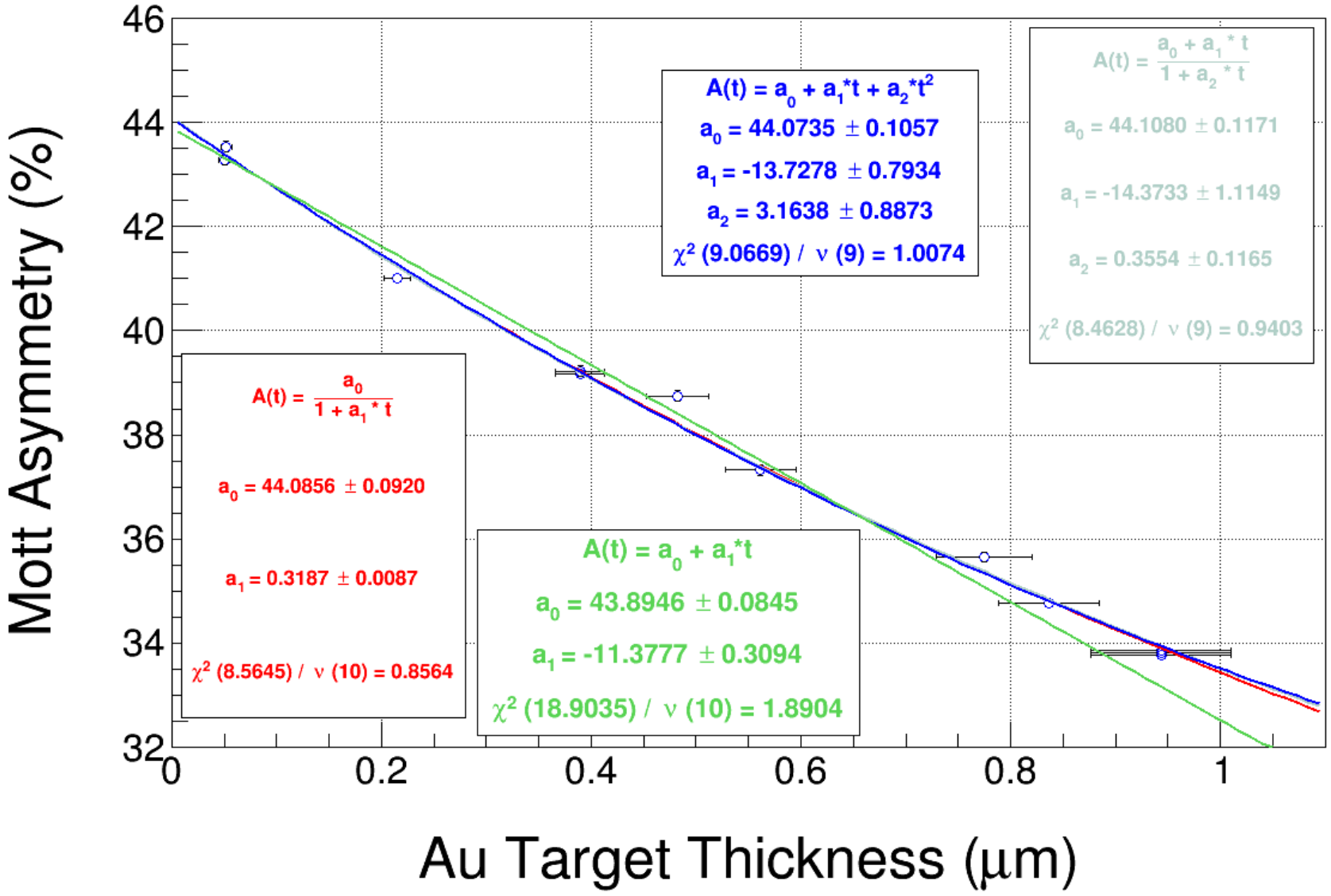
Pade Fits = P(nm)

$$R(x) = \frac{\sum_{j=0}^{m} a_j x^j}{1 + \sum_{k=1}^{n} b_k x^k} = \frac{a_0 + a_1 x + a_2 x^2 + \cdots + a_m x^m}{1 + b_1 x + b_2 x^2 + \cdots + b_n x^n}$$

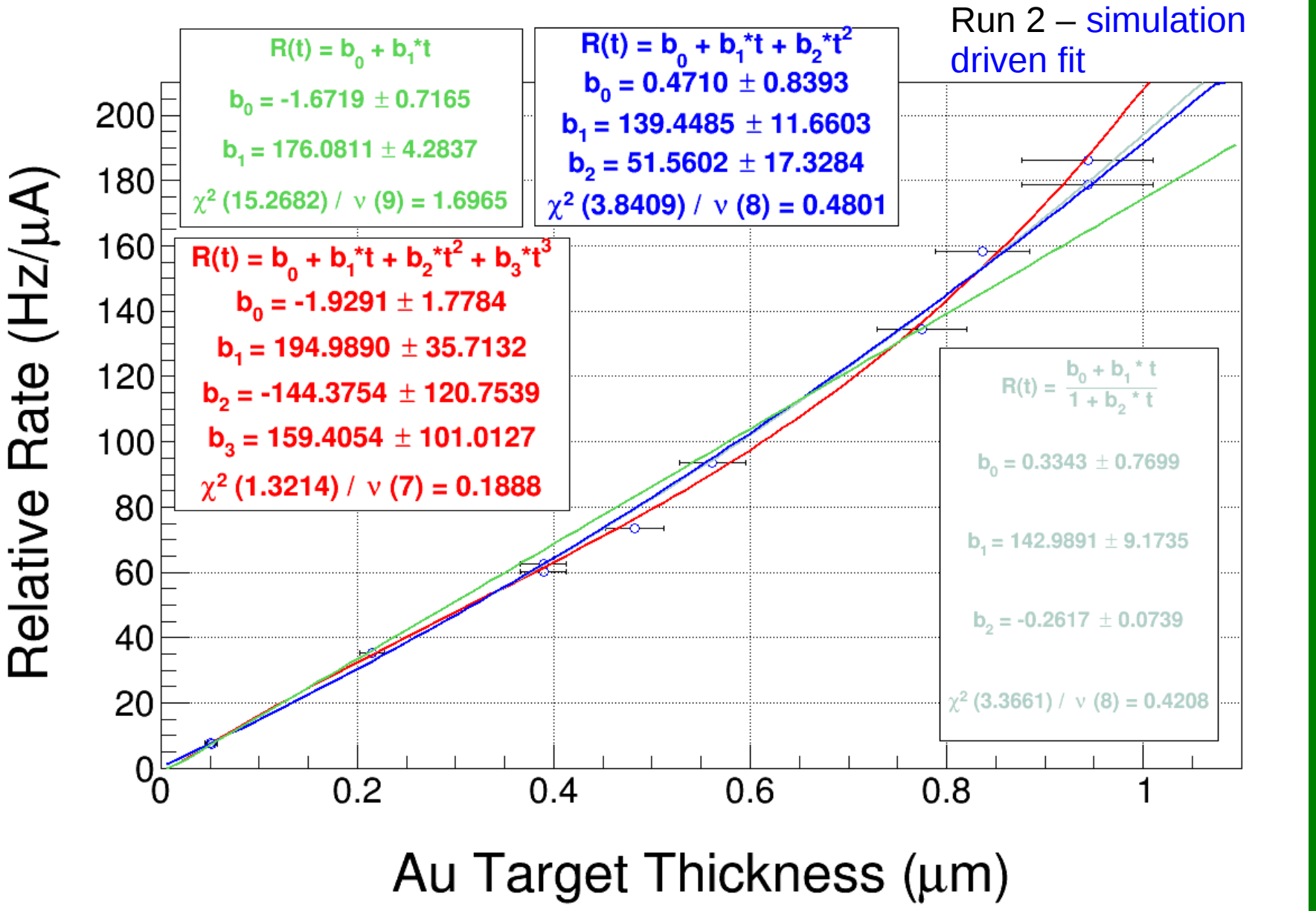
- Asymmetry v Thickness – P(01), P(11) the simulation-driven fit, P(20) and P(10)
- Rate v Thickness – P(11), P(10), P(20) (simulation-driven fit with a_0 = 0), P(30)
- Asymmetry v Rate – P(02), P(11), P(20), P(10); need to crunch through some algebra to determine simulation-driven fit

Asymmetry vs Thickness

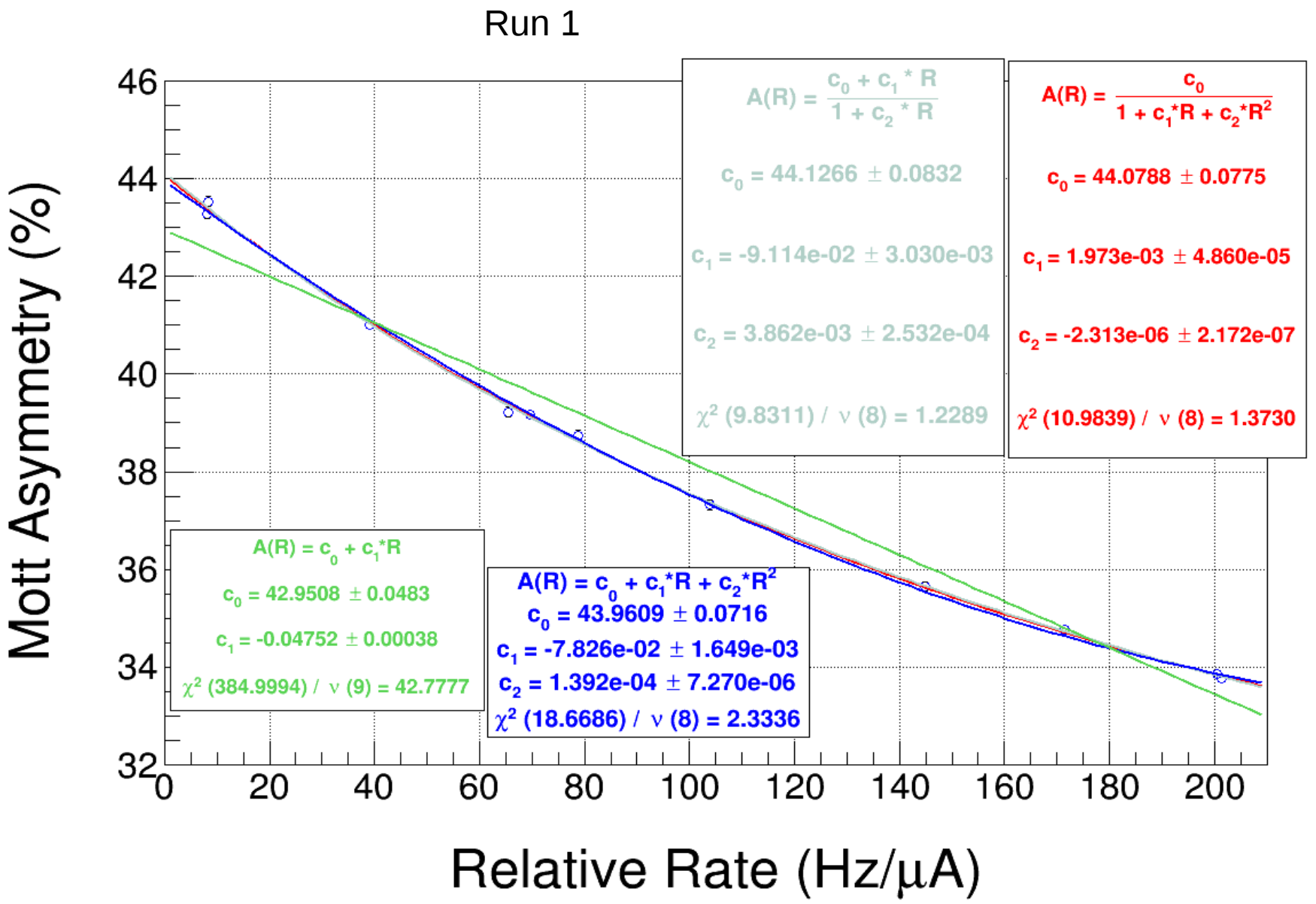
Run 1 – simulation drive fit



Rate vs Thickness



Asymmetry vs Rate



To Do

- Rectify differences between Run I and II rates
- Reproduce Marty's Geant4 simulations for final Run I and II conditions
- Examination of IHWP effects on data
- Examination of stability runs on 1um foil – how stable were we?