Marathon Bin Centering: An Estimation for Ratios

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(With plots from Mike Nycz and Tong Su)

Approximation Method

- Used a model from Kalugin and Petti

- Model gives finely binned data of F2 for proton, neutron, Deuteron, Helium-3, and Tritium

- Using this, we calculated the model cross sections

- To approximate the Bin Centering Correction, we averaged the cross sections over a number of bins and divided by the center bin
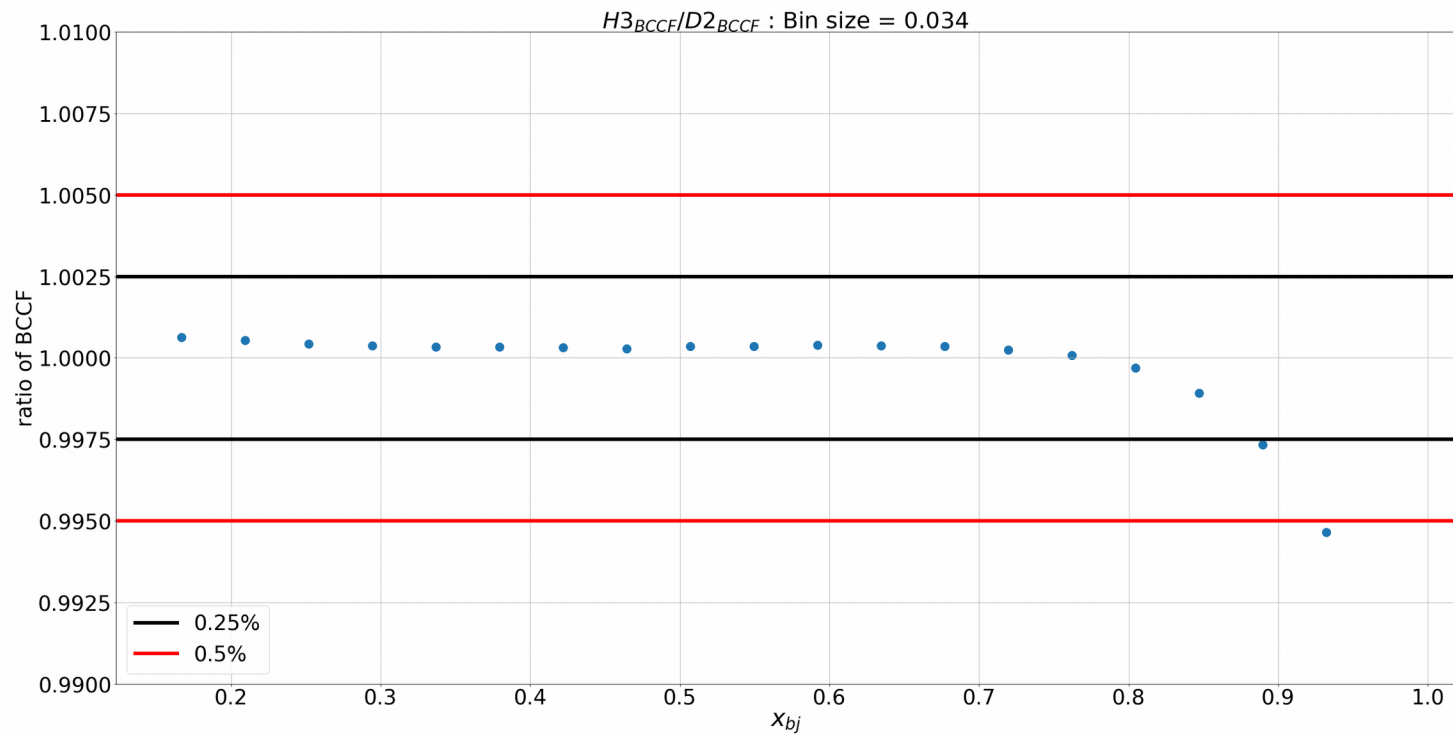
Approximation Method

- Each of us (Myself, Mike, and Tong) did the calculations for the targets we will use for our thesis data

- We took the ratio of the results to see an approximation of the magnitude of the correction to our final ratios

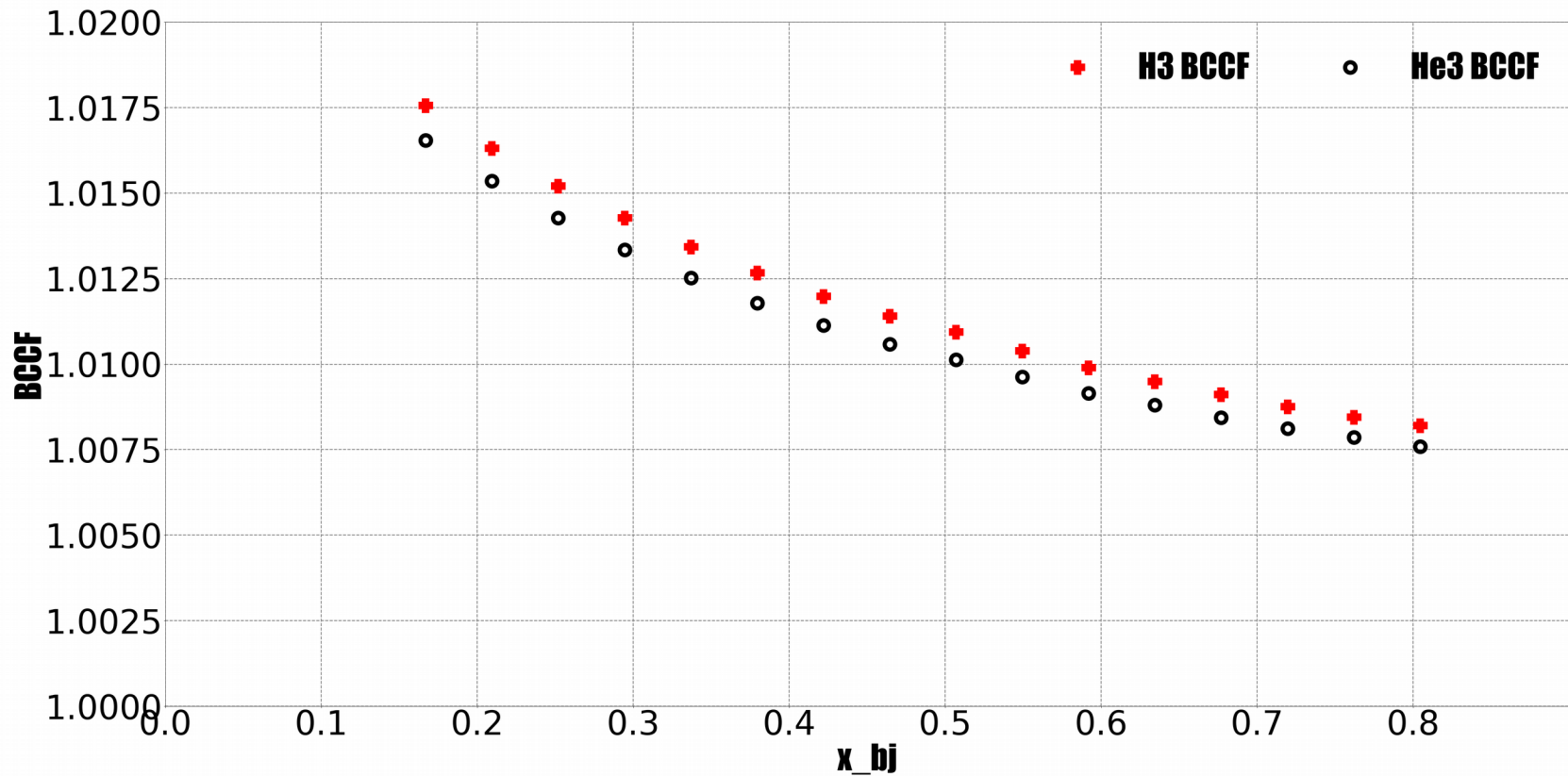- Using this, we used two different final bin sizes: 0.034 and 0.051
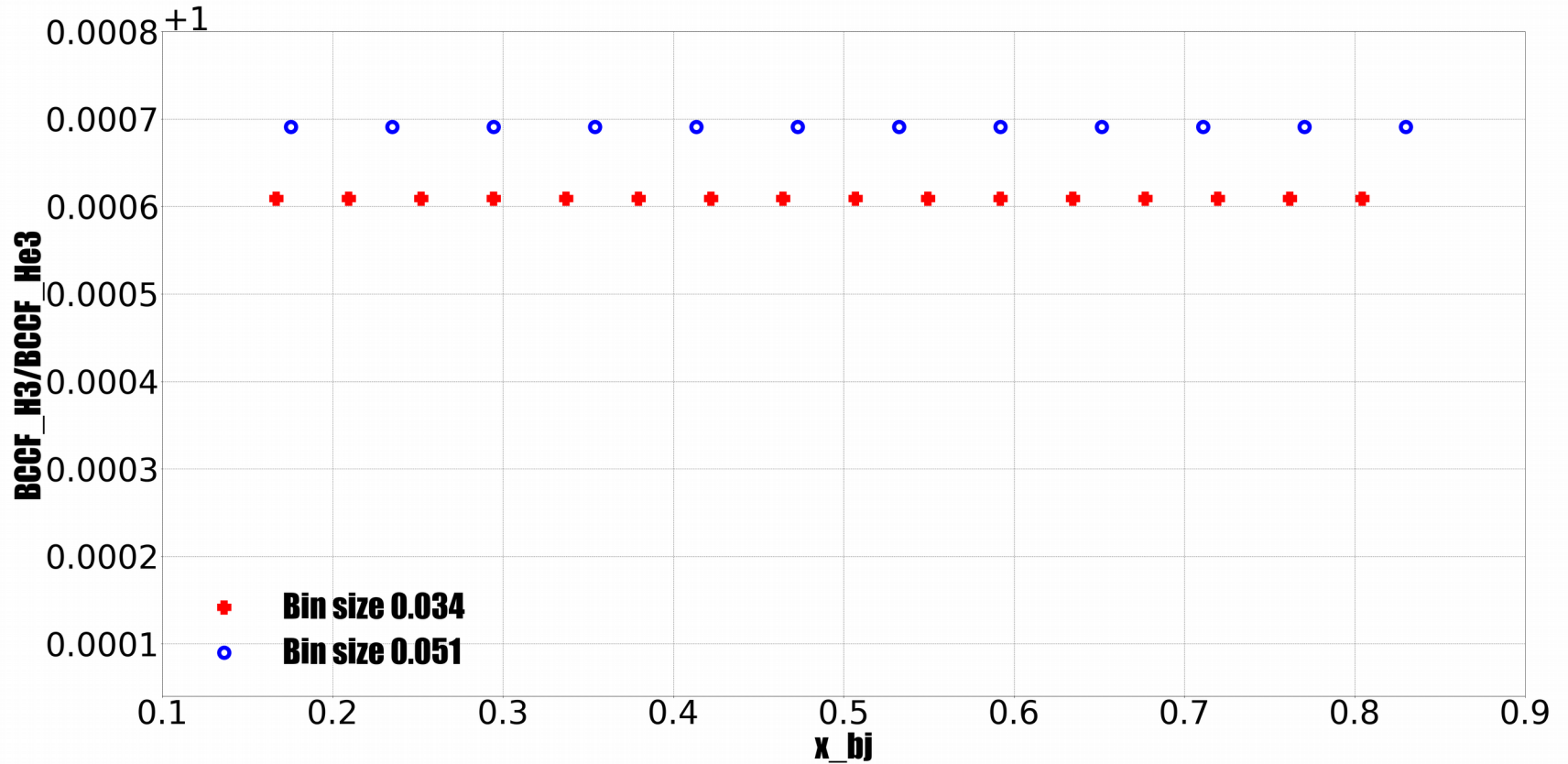
Bin Size 0.034
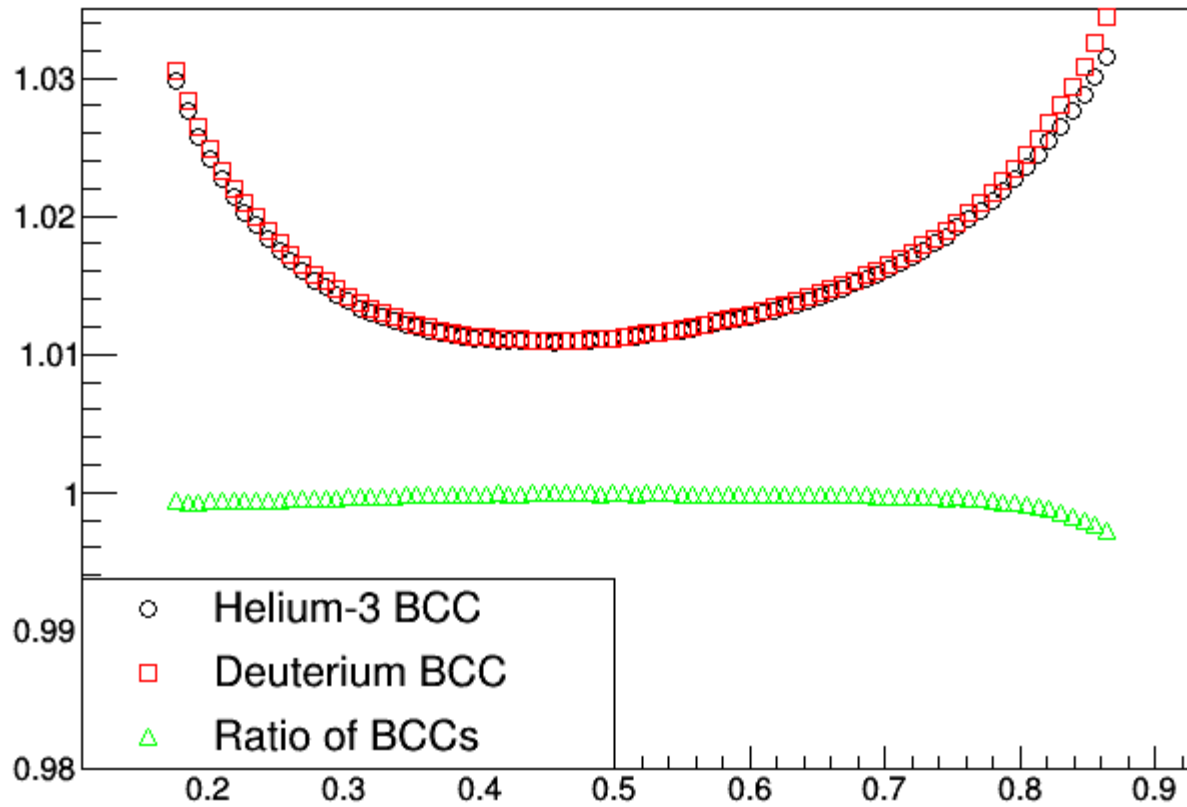
Bin Size 0.034 - From Mike

$H3_{BCCF}/D2_{BCCF}$: Bin size = 0.034
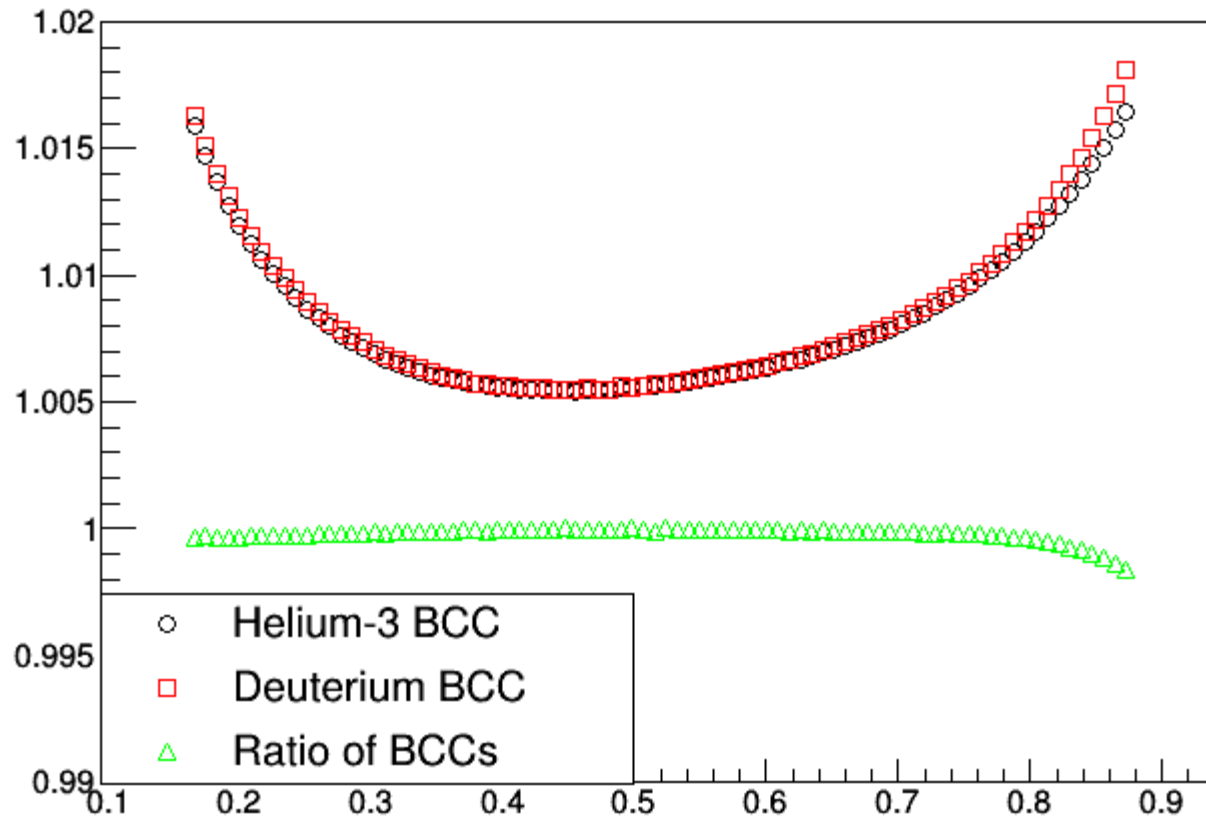
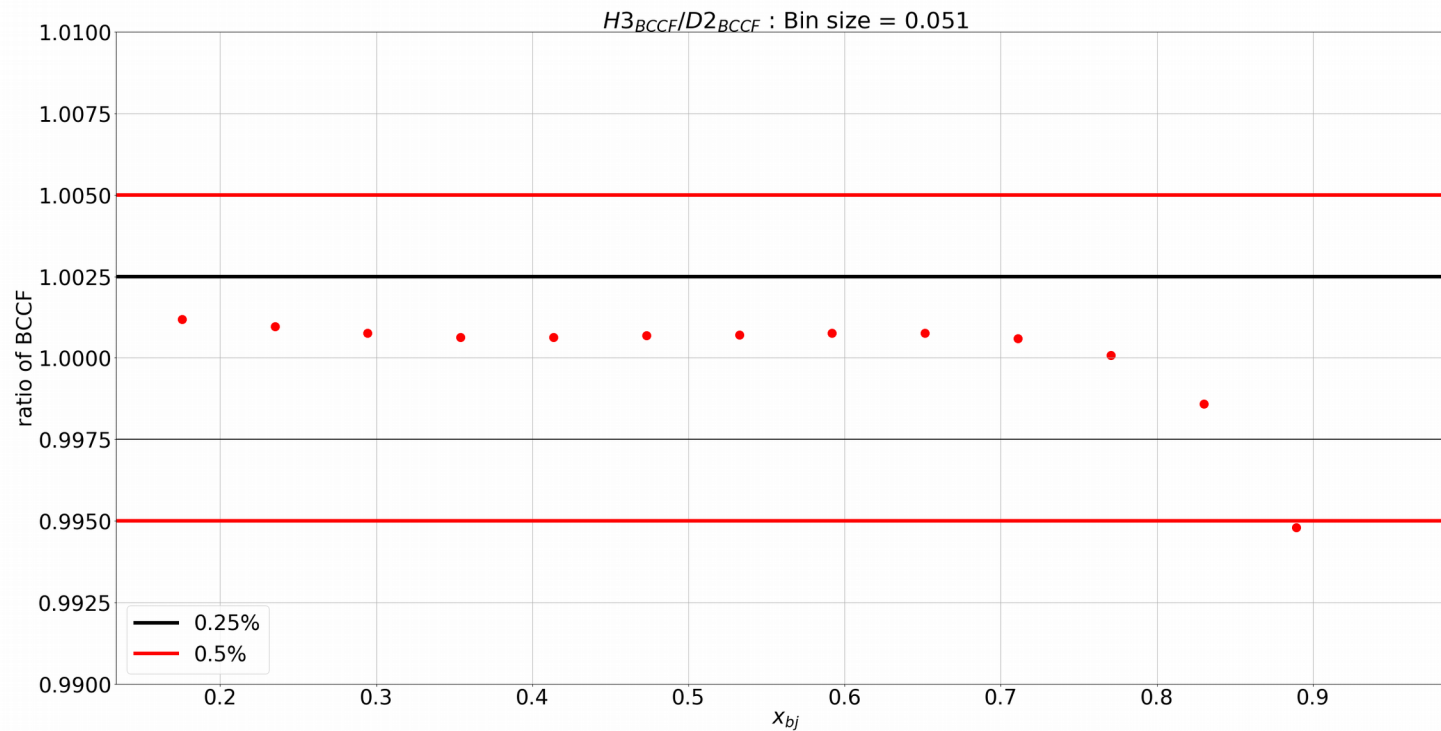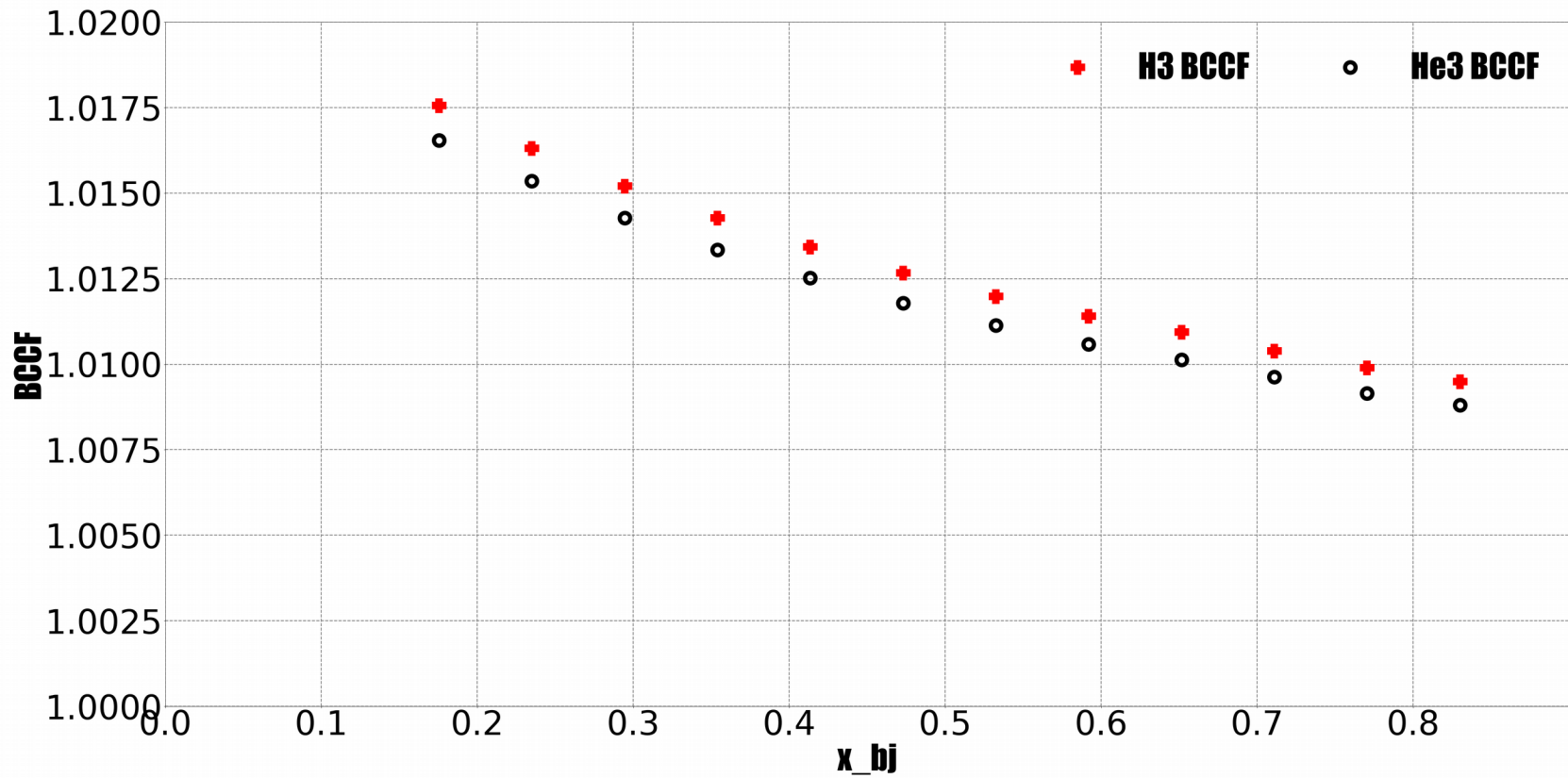# Bin Size 0.034 - From Tong

H3/He3 – From Tong

Bin Size 0.051

Bin Size 0.051 - From Mike

Bin Size 0.051 - From Tong

Results

- Our approximations show that the bin centering correction on any single target is on the couple percent level

- However, the corrections are nearly identical for each target

- The final correction to the ratio is well below 1%

- This suggests that we are safe to show results without Bin Centering Corrections if the result is a ratio.