Systematic Correction—Part II

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MARATHON Weekly Analysis Meeting

Aug,02,2018

β-decay Correction from T.Kutz

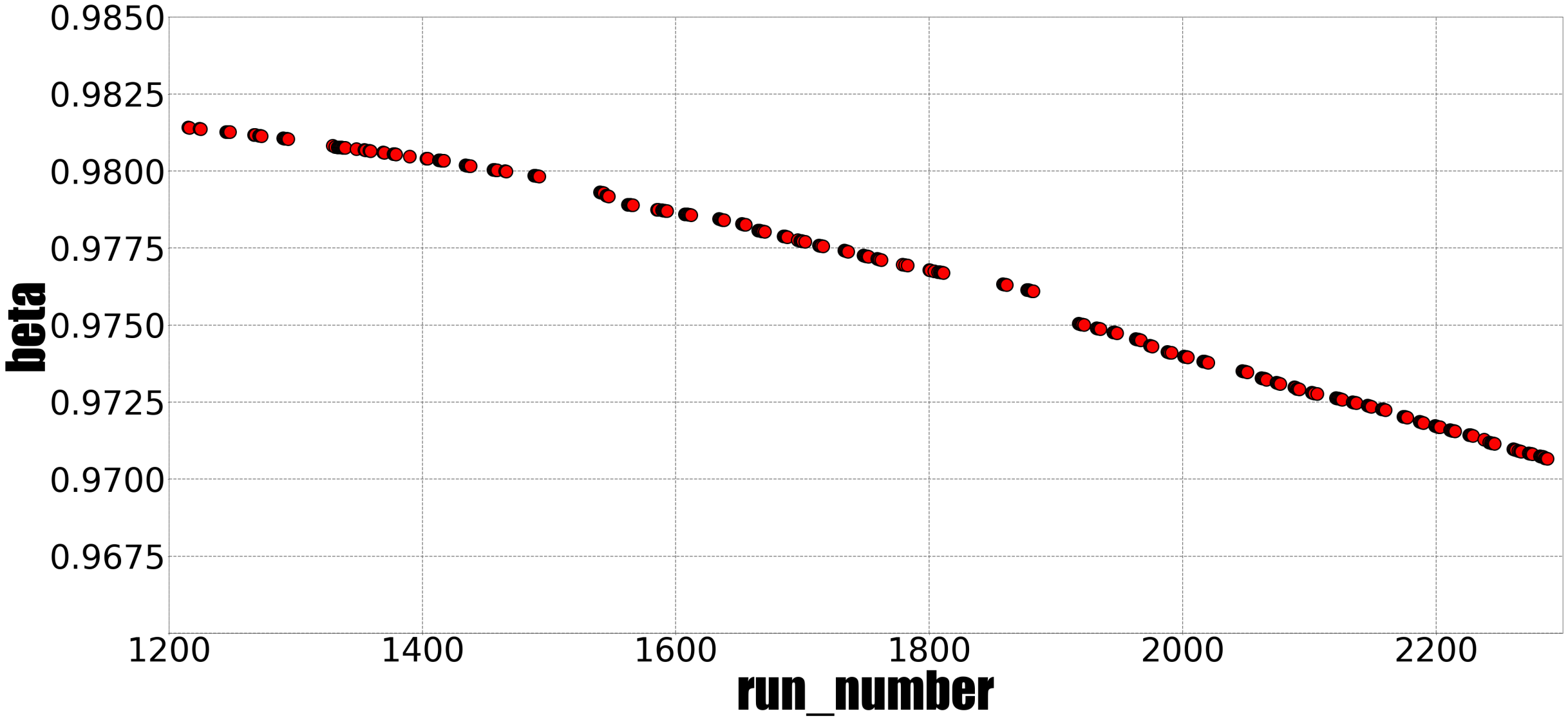
- According to T.Kutz's study

$$\frac{\sigma\,{}^{3}_{H}}{\sigma\,{}^{3}_{He}} = \left(\frac{\sigma_{tot}}{\sigma\,{}^{3}_{He}}\right)\left(\frac{1}{1-c}\right) - \frac{c}{1-c}$$

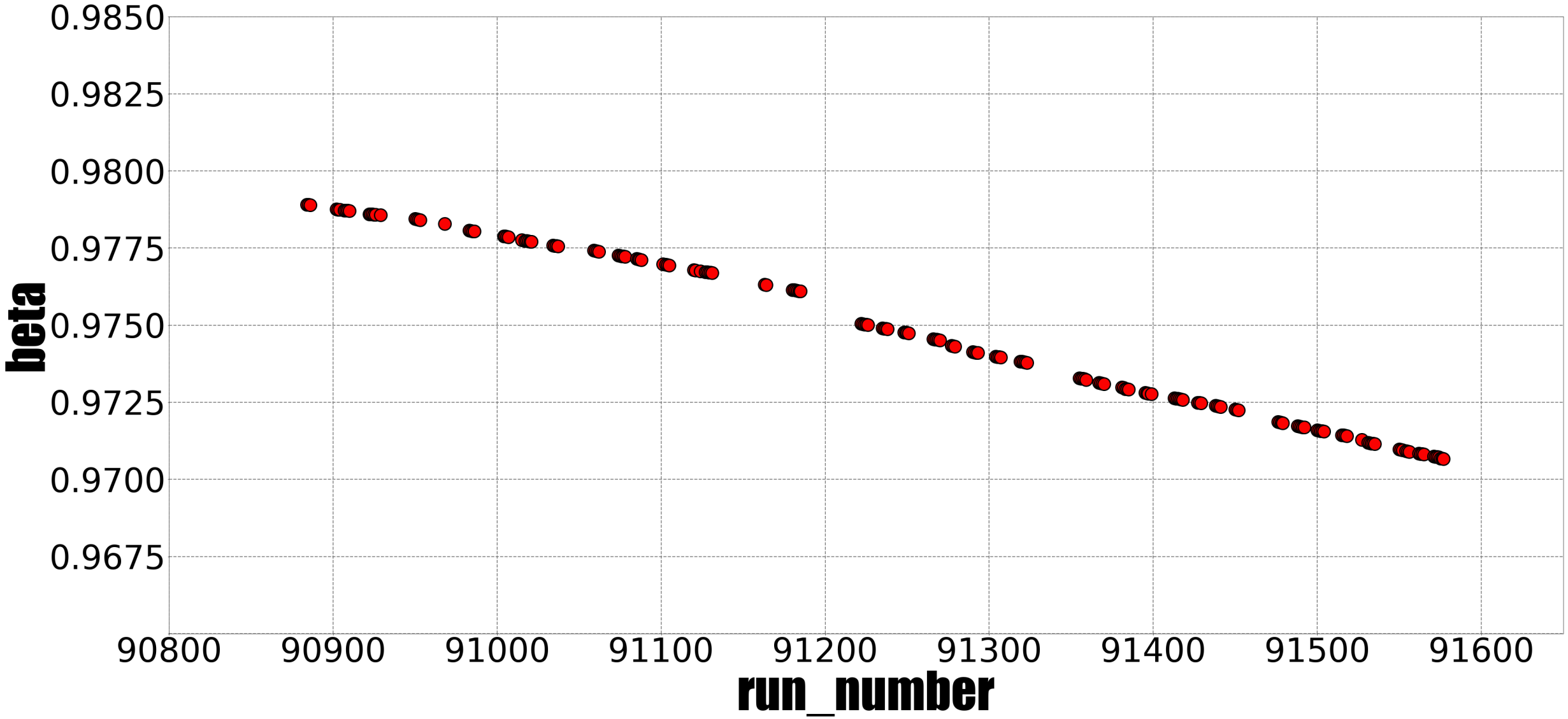
$$\text{Where} \quad c = 1 - \beta = \frac{\eta_{He3}}{\eta_{tot}}$$

$$c_{KIN}^{eff} = \frac{\sum_{i}^{KIN} c_i * Time_i}{\sum_{i}^{KIN} Time_i}$$

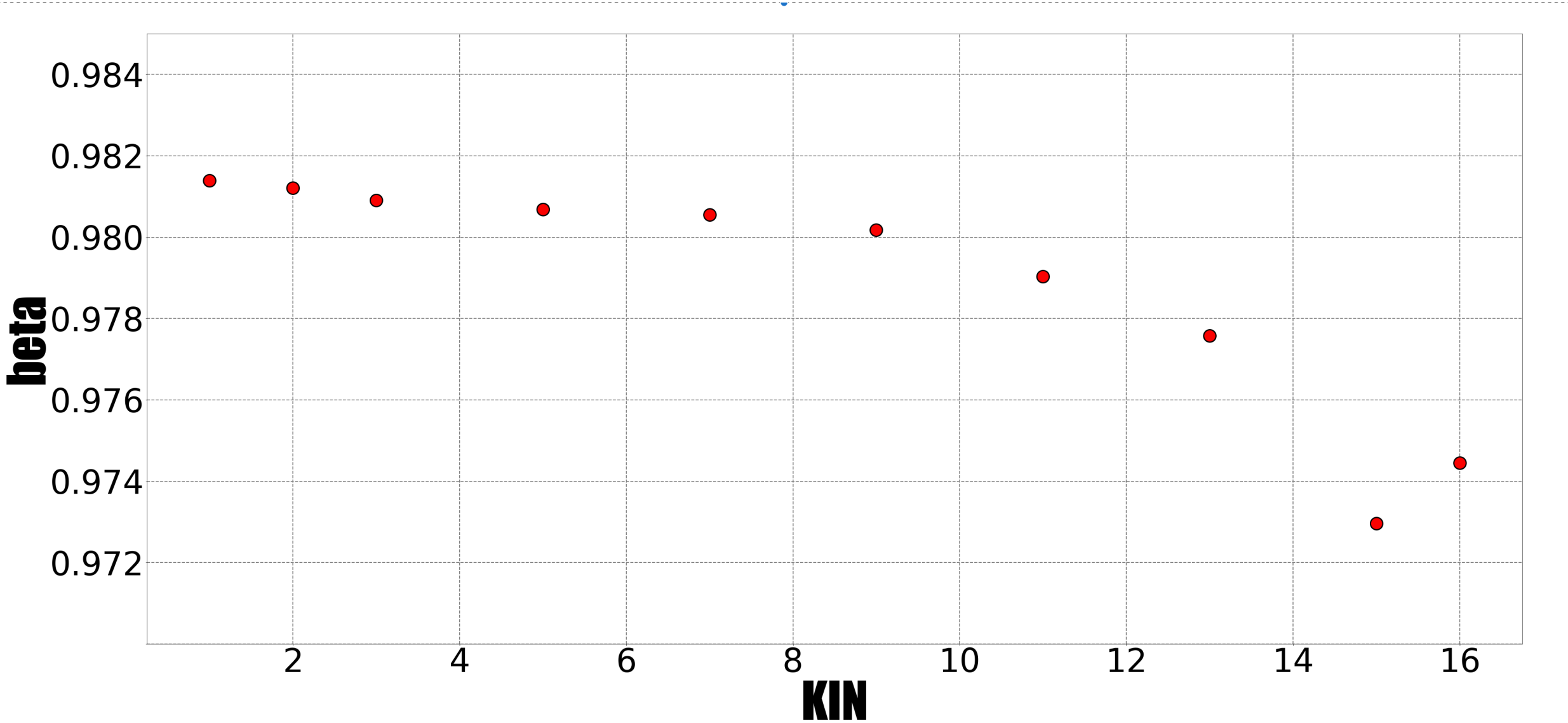
LHRS

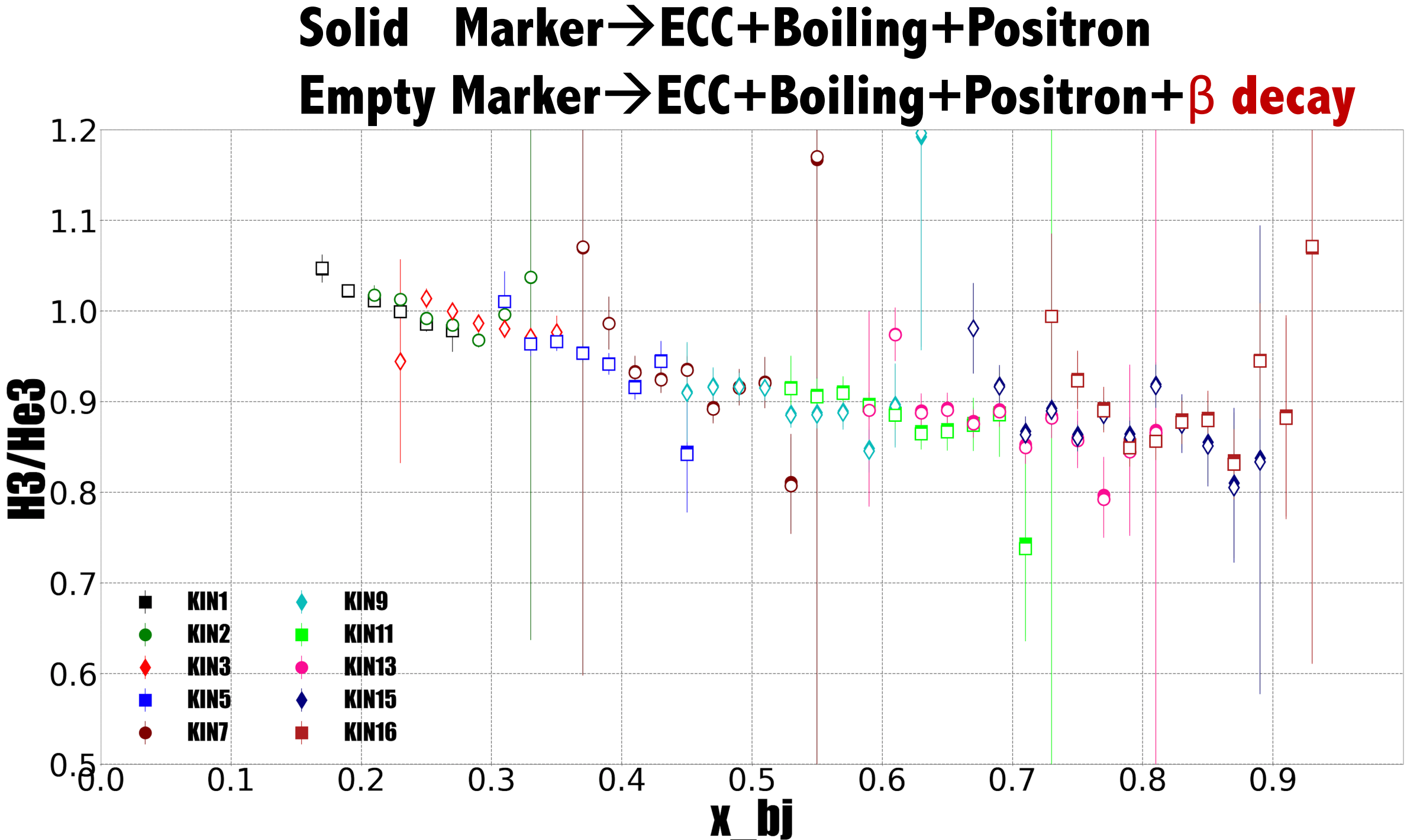

0.9850
0.9825
0.9800
0.9775
0.9750
0.9725
0.9700
0.9675
beta
1200
1400
1600
1800
2000
2200
run_number

RHRS

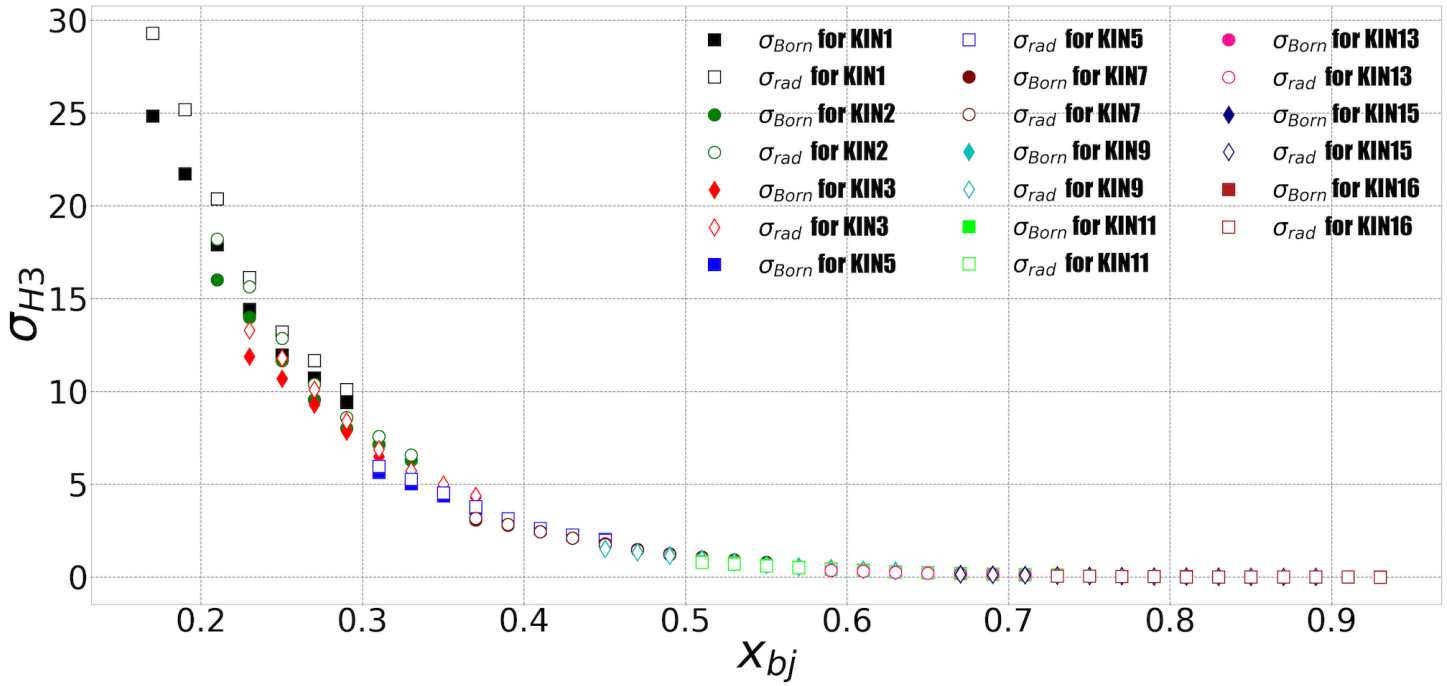

0.9850
0.9825
0.9800
0.9775
0.9750
0.9725
0.9700
0.9675
beta
90800
90900
91000
91100
91200
91300
91400
91500
91600
run_number

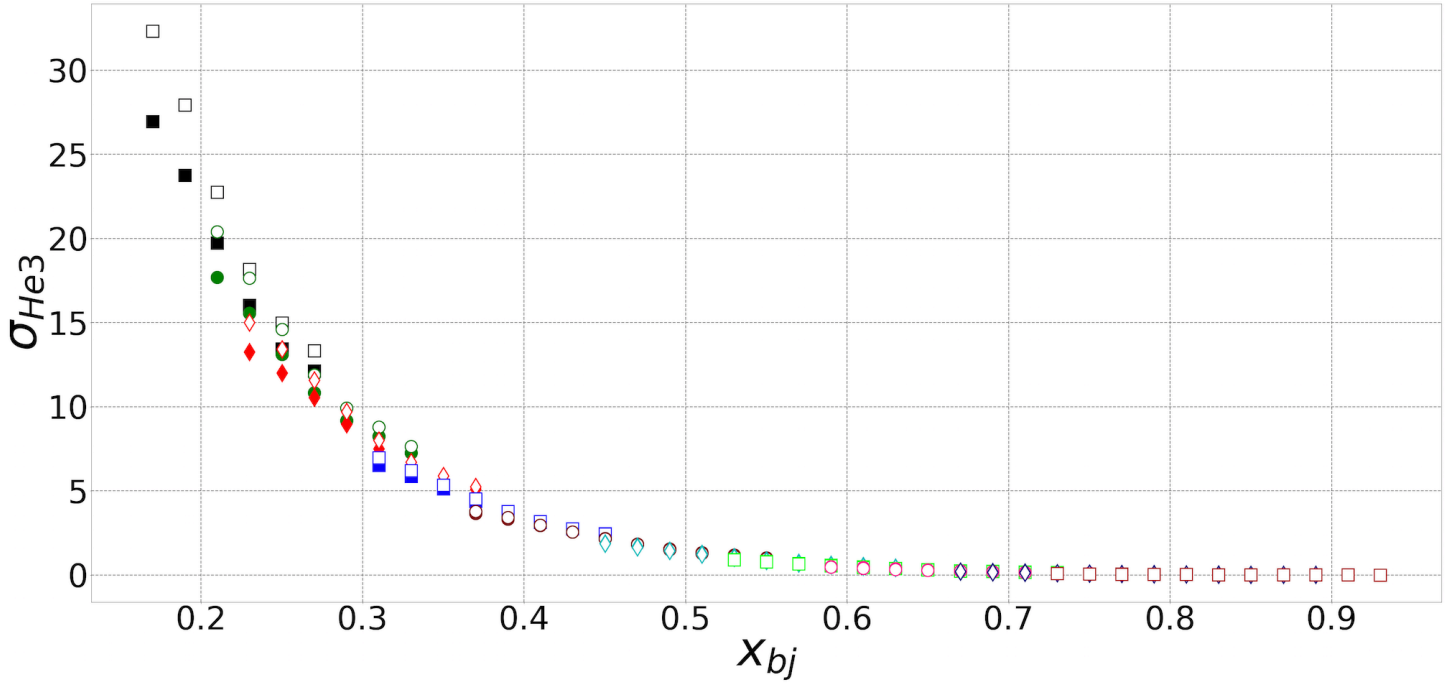
Effective beta for each kinematic setting

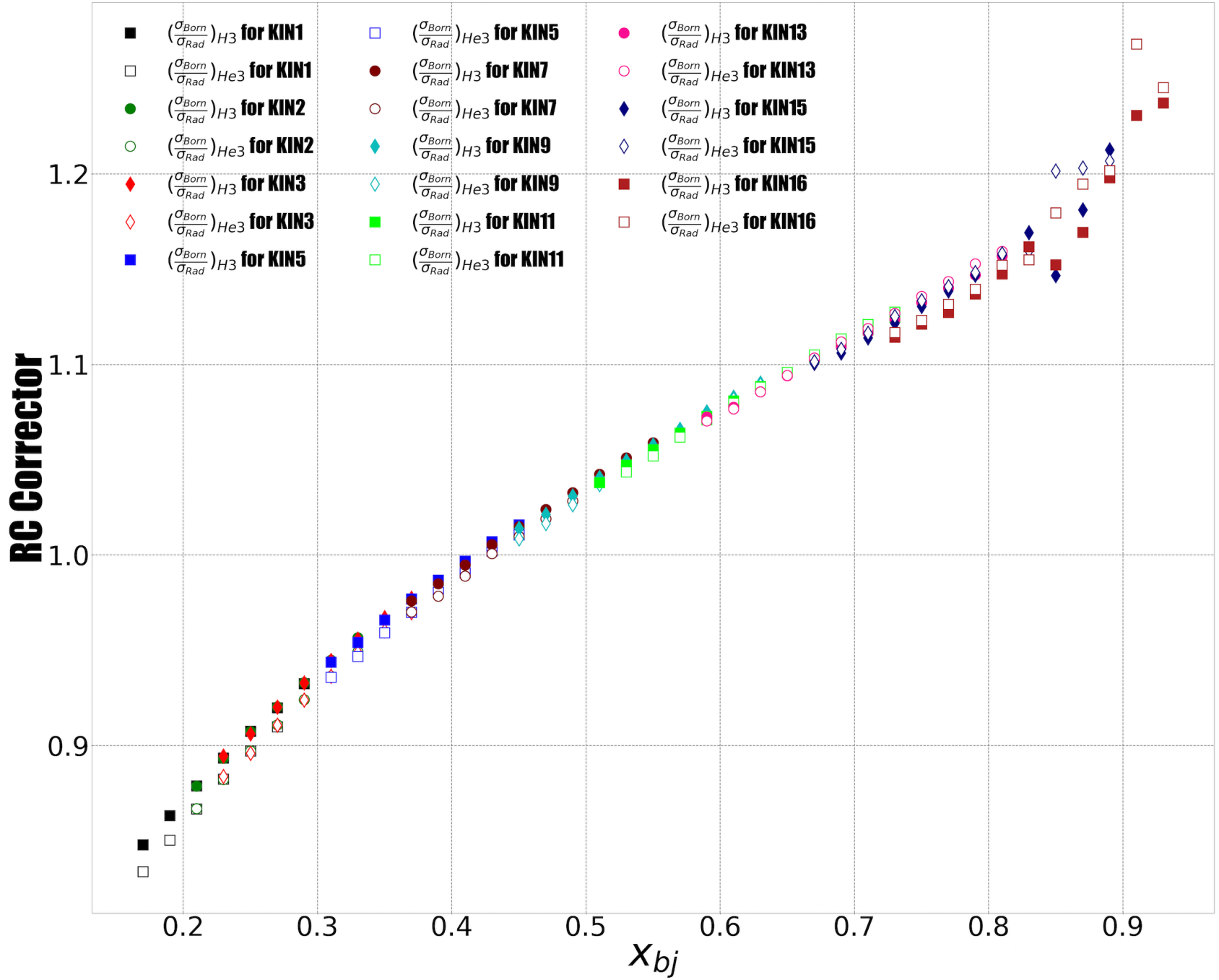


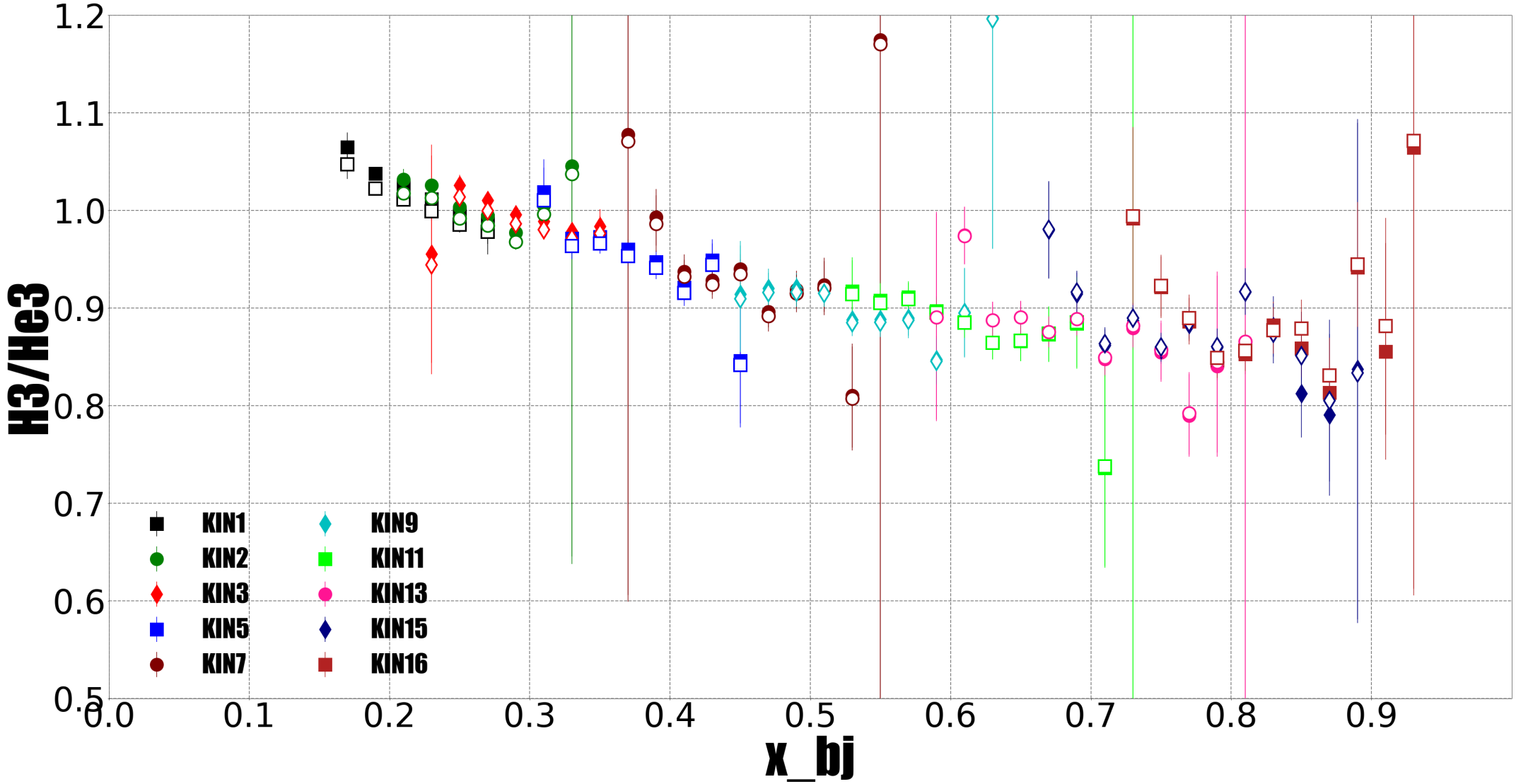

Solid Marker→ECC+Boiling+Positron
Empty Marker→ECC+Boiling+Positron+β decay
H3/He3
x_bj
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
KIN1
KIN2
KIN3
KIN5
KIN7
KIN9
KIN11
KIN13
KIN15
KIN16

Radiative Correction from H.Liu






$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN1
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN1
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN2
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN2
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN3
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN3
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN5
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN5
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN7
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN7
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN9
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN9
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN11
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN11
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN13
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN13
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN15
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN15
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{H3}$ for KIN16
$(\frac{\sigma_{Born}}{\sigma_{Rad}})_{He3}$ for KIN16
RC Corrector
1.2
1.1
1.0
0.9
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
x_{bj}

Empty Marker →ECC+Boiling+Positron+β decay

Solid Marker →ECC+Boiling+Positron+β decay+Radiative Correction