

E70 meeting

2020/08/24

Ohashi

Beam through dataに対して様々なインプット、アウトプットを設定し再現度を評価した

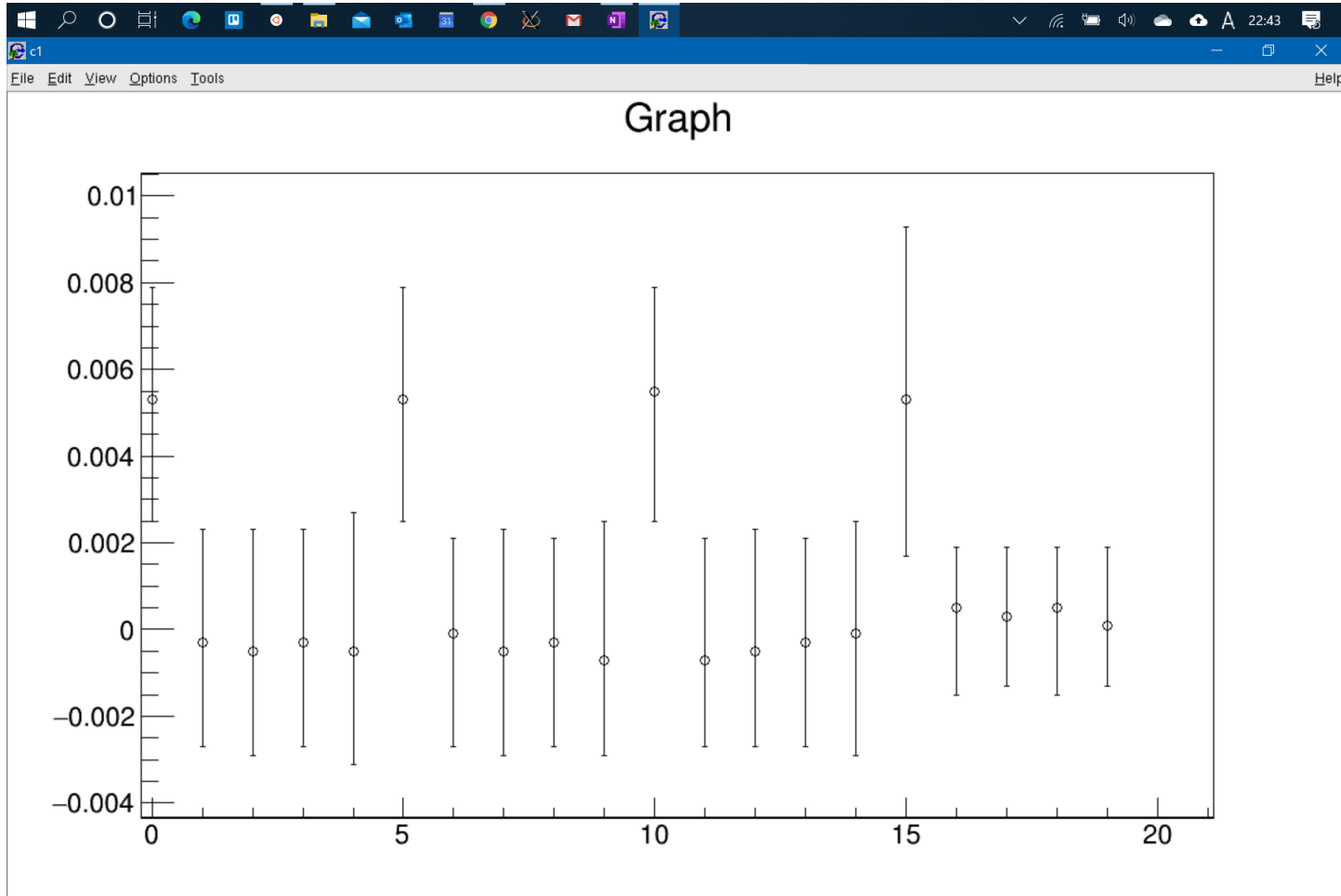
P_k18	(predPk18 - Pk18)/Pk18(FWHM)	P_SKS	(predPsk18 - Psk18)/Psk18 (FWHM)
beamP		scatP	
beamP2: DummyBeamP2		scatP2: DummpyScatP2	
Lgb(X BL->beamP):02	0.0004266666666666667	Lgb(X SKS -> scatP):06	0.0014000000000000002
Lgb(X BL, X SKS -> beamP)	0.0003533333333333334	Lgb(X BL, X SKS -> scatP)	0.0011333333333333334
Lgb(X SKS -> beamP):01	0.0027333333333333337 (* *)	Lgb(X BL -> scatP):07	0.0043333333333333334 (*)
Lgb(X BL, BH2nhits -> beamP2):09	0.0004133333333333334	Lgb(X SKS -> scatP2):10	0.0014000000000000002
Lgb(X BL, nhitsBH2, X SKS -> beamP2):11	0.00033999999999999997	Lgb(X BL, nhitsBH2, X SKS -> scatP2):12	0.0012666666666666667
Lgb(BH2nhits, X SKS -> beamP2) :1901	0.0028000000000000004 (* *)	Lgb(X BL, X SKS -> scatP2):13	0.0012000000000000003
		Lgb(X BL -> scatP2) :1902	0.0043333333333333333 (*)

(pML - p)/p

beamP ~ 4e-4 beamP2 ~ 4e-4

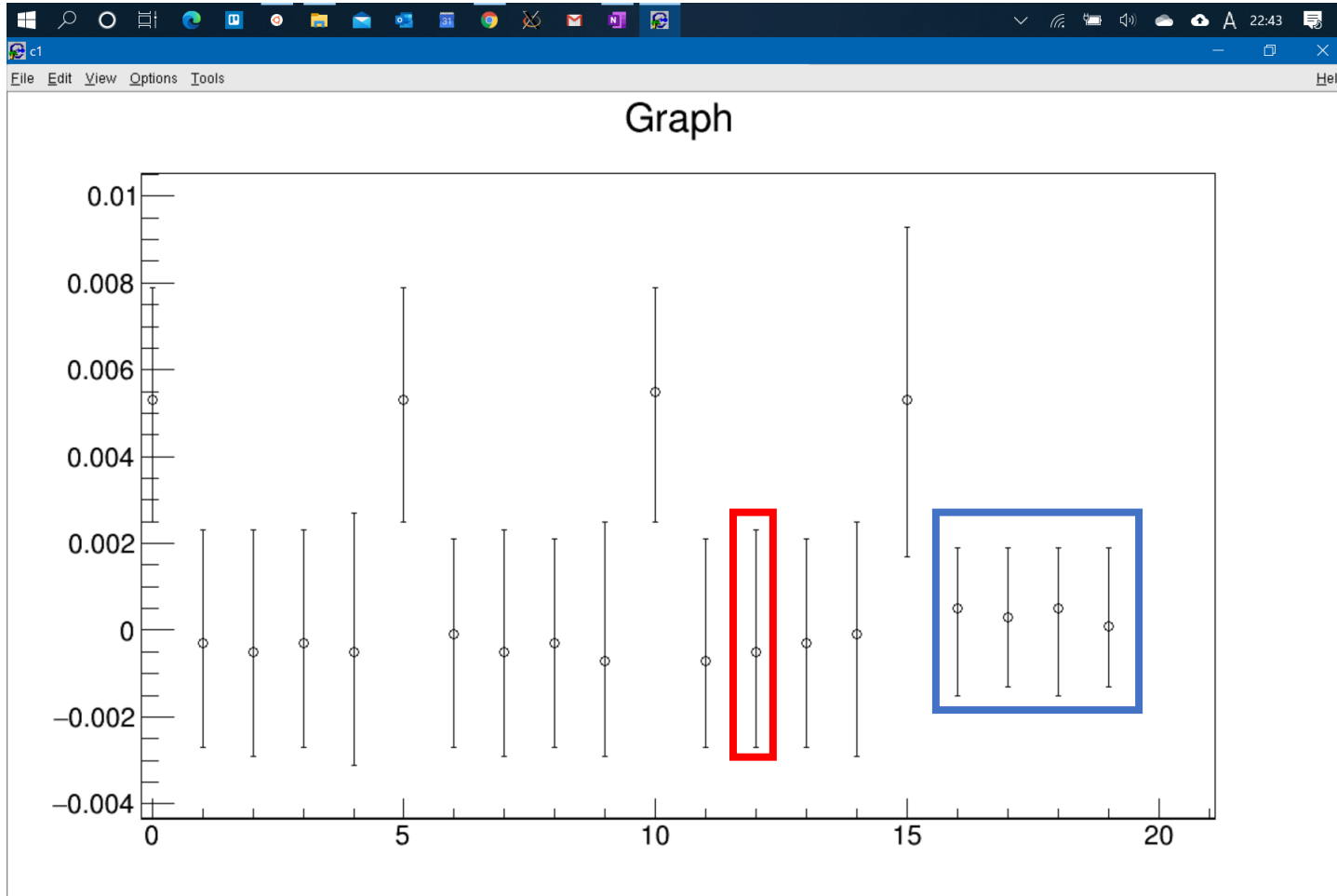
scatP ~ 1.4e-3 scatP2 ~ 1.4e-3

再現したPk18, Psksすべてについて
 $dp = Pk18 - Psks$ をとった



- 0 : log20200818_09_log20200819_02
- 1 : log20200818_09_log20200818_12
- 2 : log20200818_09_logDummyScatP2
- 3 : log20200818_09_log20200818_13
- 4 : log20200818_09_log20200818_10
- 5 : log20200818_11_log20200819_02
- 6 : log20200818_11_log20200818_12
- 7 : log20200818_11_logDummyScatP2
- 8 : log20200818_11_log20200818_13
- 9 : log20200818_11_log20200818_10
- 10 : logDummyBeamP2_log20200819_02
- 11 : logDummyBeamP2_log20200818_12
- 12 : logDummyBeamP2_logDummyScatP2
- 13 : logDummyBeamP2_log20200818_13
- 14 : logDummyBeamP2_log20200818_10
- 15 : log20200819_01_log20200819_02
- 16 : log20200819_01_log20200818_12
- 17 : log20200819_01_logDummyScatP2
- 18 : log20200819_01_log20200818_13
- 19 : log20200819_01_log20200818_10

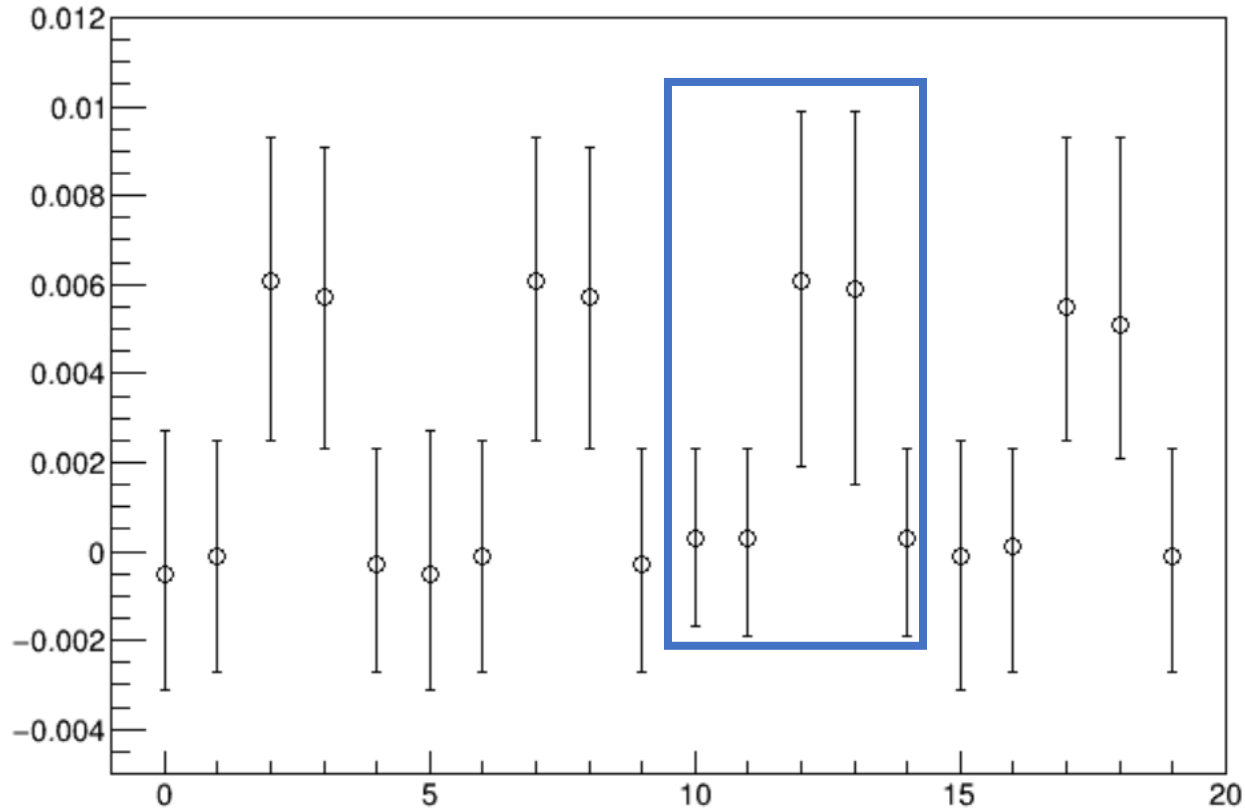
従来解析の差分(conf 12)より小さくなる 組み合わせも存在



- 16 : log20200819_01_log20200818_12
- 17 : log20200819_01_logDummyScatP2
- 18 : log20200819_01_log20200818_13
- 19 : log20200819_01_log20200818_10

P_k18	(predPk18 - Pk18)/Pk18(FWHM)
beamP	
beamP2: DummyBeamP2	
Lgb(X BL->beamP):02	0.0004266666666666667
Lgb(X BL, X SKS -> beamP)	0.00035333333333333334
Lgb(X SKS -> beamP):01	0.0027333333333333337 (**)
Lgb(X BL, BH2nhits -> beamP2):09	0.00041333333333333334
Lgb(X BL, nhitsBH2, X SKS -> beamP2):11	0.00033999999999999997
Lgb(BH2nhits, X SKS -> beamP2) :1901	0.00280000000000000004 (**)

別のMLアルゴリズム(xgb)



- confs
- 0 : ./xgb/logconf20200818_09_logconf20200818_10
- 1 : ./xgb/logconf20200818_09_logconf20200818_12
- 2 : ./xgb/logconf20200818_09_logconf20200819_02
- 3 : ./xgb/logconf20200818_09_logconfDummyScatP2
- 4 : ./xgb/logconf20200818_09_logconf20200818_13
- 5 : ./xgb/logconfDummyBeamP2_logconf20200818_10
- 6 : ./xgb/logconfDummyBeamP2_logconf20200818_12
- 7 : ./xgb/logconfDummyBeamP2_logconf20200819_02
- 8 : ./xgb/logconfDummyBeamP2_logconfDummyScatP2
- 9 : ./xgb/logconfDummyBeamP2_logconf20200818_13
- 10 : ./xgb/logconf20200819_01_logconf20200818_10
- 11 : ./xgb/logconf20200819_01_logconf20200818_12
- 12 : ./xgb/logconf20200819_01_logconf20200819_02
- 13 : ./xgb/logconf20200819_01_logconfDummyScatP2
- 14 : ./xgb/logconf20200819_01_logconf20200818_13
- 15 : ./xgb/logconf20200818_11_logconf20200818_10
- 16 : ./xgb/logconf20200818_11_logconf20200818_12
- 17 : ./xgb/logconf20200818_11_logconf20200819_02
- 18 : ./xgb/logconf20200818_11_logconfDummyScatP2
- 19 : ./xgb/logconf20200818_11_logconf20200818_13

補正方法

- $P_{sks} = P_{k18} + dP$
- となるように $dp(X_{k18})$ を最適化
- これは先ほどまでの $X_{k18} \rightarrow P_{sks}$ に対応
 - 右上(lgb)の1902 ... $dp \sim 4.3e-3$
 - 従来法 $dp \sim 5e-3$
- \Rightarrow 「beam throughで従来より差の分散が小さくなった」 (?)
- dp は X_{sks} を含めてはいけないのでは? (推測)
 - Reaction eventの解析時にbeam throughで最適化した dp を使いたい
 - Beam through時の X_{sks} はreaction eventの際の X_{sks} と領域 (分布) が異なる
- 入射運動量を補正するアプローチがよい
 - Dp を X_{k18} で書き、 $P_{k18_cor}(X_{k18}) = (P_{k18} + dp)(X_{k18})$ とする
- その後、reaction eventのMMで P_{sks} を補正

P_SKS	(predPsk - Psks)/Psks (FWHM)
scatP	
scatP2: DummpyScatP2	
Lgb(X_SKS -> scatP):06	0.0014000000000000002
Lgb(X_BL, X_SKS -> scatP)	0.0011333333333333334
Lgb(X_BL -> scatP):07	0.0043333333333333334 (*)
Lgb(X_SKS -> scatP2):10	0.0014000000000000002
Lgb(X_BL, nhitsBH2, X_SKS -> scatP2):12	0.0012666666666666667
Lgb(X_BL, X_SKS -> scatP2):13	0.0012000000000000003
Lgb(X_BL -> scatP2) :1902	0.0043333333333333333 (*)

Lgbグラフの値

peakpos:0.0053, fwhm:0.005399999999999986 ,rootpath:log20200818_09_log20200819_02.root
peakpos:-0.0002999999999999993, fwhm:0.005 ,rootpath:log20200818_09_log20200818_12.root
peakpos:-0.0004999999999999998, fwhm:0.005200000000000001 ,rootpath:log20200818_09_logDummyScatP2.root
peakpos:-0.0002999999999999993, fwhm:0.005 ,rootpath:log20200818_09_log20200818_13.root
peakpos:-0.0004999999999999998, fwhm:0.0058 ,rootpath:log20200818_09_log20200818_10.root
peakpos:0.0053, fwhm:0.005399999999999986 ,rootpath:log20200818_11_log20200819_02.root
peakpos:-0.00010000000000000052, fwhm:0.0048 ,rootpath:log20200818_11_log20200818_12.root
peakpos:-0.0004999999999999998, fwhm:0.005200000000000001 ,rootpath:log20200818_11_logDummyScatP2.root
peakpos:-0.0002999999999999993, fwhm:0.0048 ,rootpath:log20200818_11_log20200818_13.root
peakpos:-0.0007000000000000003, fwhm:0.005400000000000001 ,rootpath:log20200818_11_log20200818_10.root
peakpos:0.0055000000000000005, fwhm:0.005399999999999986 ,rootpath:logDummyBeamP2_log20200819_02.root
peakpos:-0.0007000000000000003, fwhm:0.0048 ,rootpath:logDummyBeamP2_log20200818_12.root
peakpos:-0.0004999999999999998, fwhm:0.005 ,rootpath:logDummyBeamP2_logDummyScatP2.root
peakpos:-0.0002999999999999993, fwhm:0.0048 ,rootpath:logDummyBeamP2_log20200818_13.root
peakpos:-0.00010000000000000052, fwhm:0.005400000000000001 ,rootpath:logDummyBeamP2_log20200818_10.root
peakpos:0.0053, fwhm:0.0076 ,rootpath:log20200819_01_log20200819_02.root
peakpos:0.0005000000000000011, fwhm:0.003399999999999985 ,rootpath:log20200819_01_log20200818_12.root
peakpos:0.0003000000000000005, fwhm:0.003199999999999997 ,rootpath:log20200819_01_logDummyScatP2.root
peakpos:0.0005000000000000011, fwhm:0.003399999999999985 ,rootpath:log20200819_01_log20200818_13.root
peakpos:0.0001, fwhm:0.003199999999999997 ,rootpath:log20200819_01_log20200818_10.root