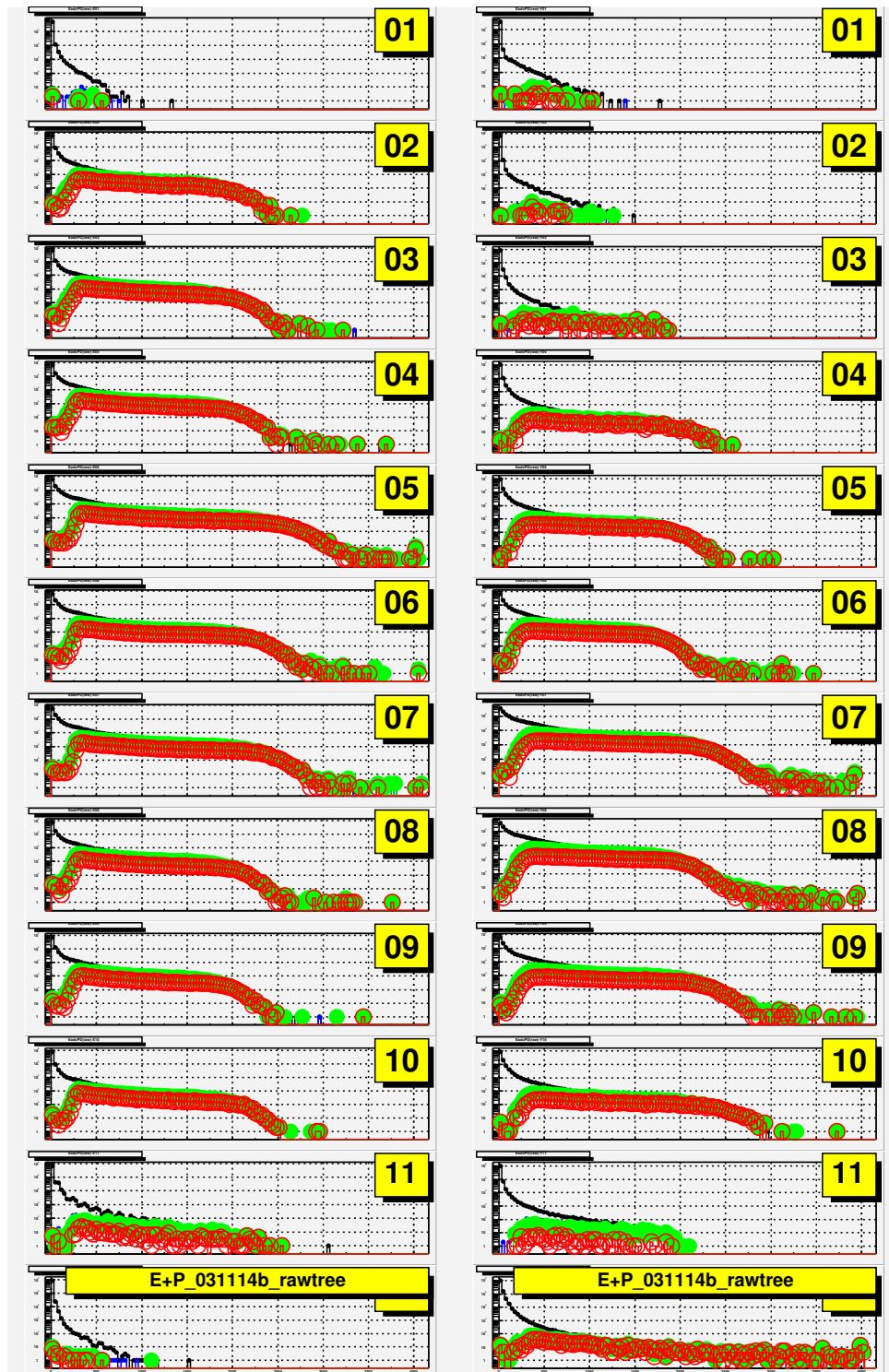


# (Inter)calibration of the Photon Detector

- Photon detector (PD)
  - 12 strips in X & 12 strips in Y , analog sums -> online  $\mathcal{L}$
  - X and Y: 2 independent interleaved sampling calos.
- Online  $\mathcal{L}$  : Count number of BCs where  $E(\text{PD } Y) > E_{\text{threshold}}$
- Last intercalibration w/ HV adjustments: 06/2002.
- Last E-Scale determination w/  $E_{\text{threshold}}$  adjustemt: 11/2002
- Local Fast DAq -> “Raw Data Mode” -> High evt statistics
- ep data taken Nov 14, 2003, 13-14h
- intercalibration coeff's applied Nov 14, 2003 (18h)
  - fit to shapes of individual channel E-flow spectra
  - calculation of HV adjustments
- determination of absolute energy scale
  - fit of (detector smeared) BH spectra to E-Sums
  - adjustment of  $E_{\text{threshold}}$
- ep data for cross check taken Nov 14, 2003 (18h)

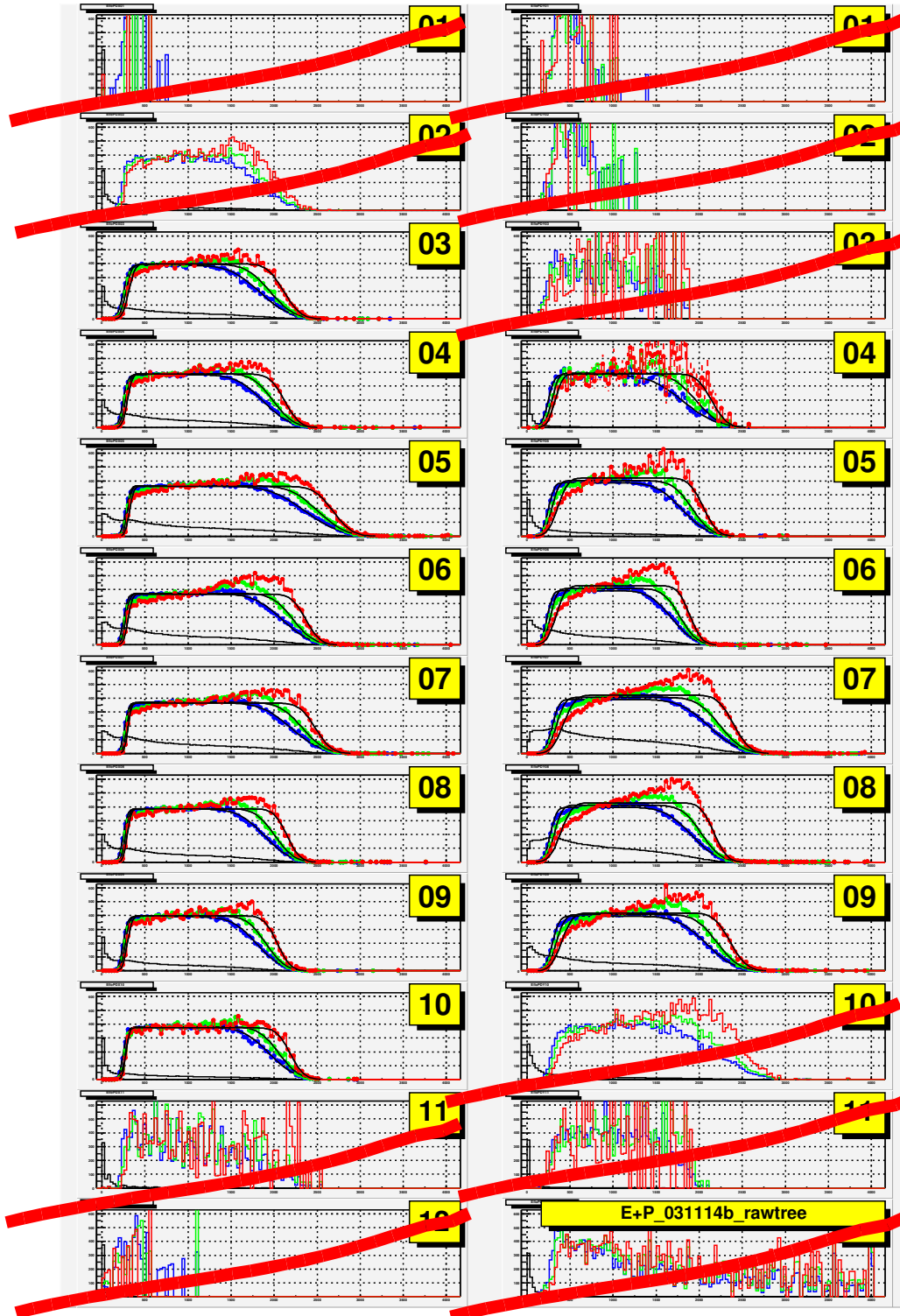
# Channel energy spectra (before)

require 60%, 70%, 80% of total E in one strip



# Channel flow spectra (before)

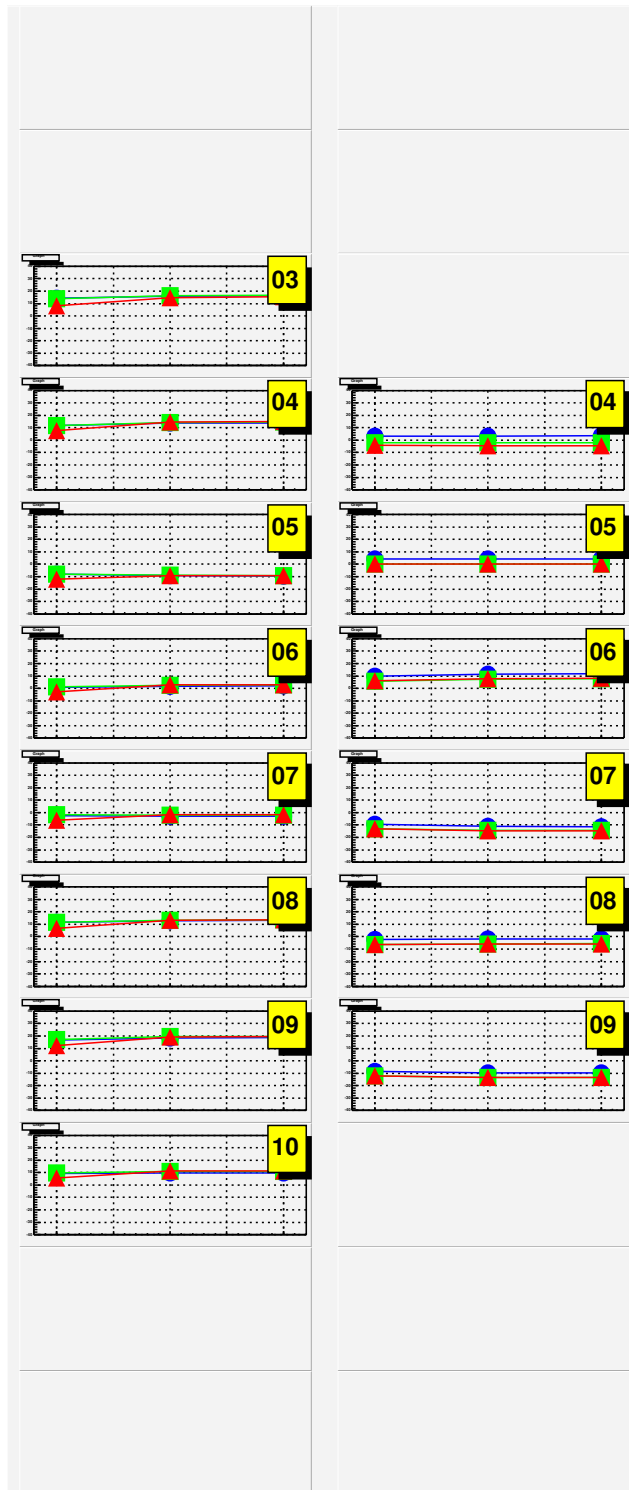
1/E- $\rightarrow$  flow: multiply bin content by energy (bin centre)



# Convergence of iteration

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$100*(c_i-1)$ , scale: -40%...40%



# Intercalibration coefficients

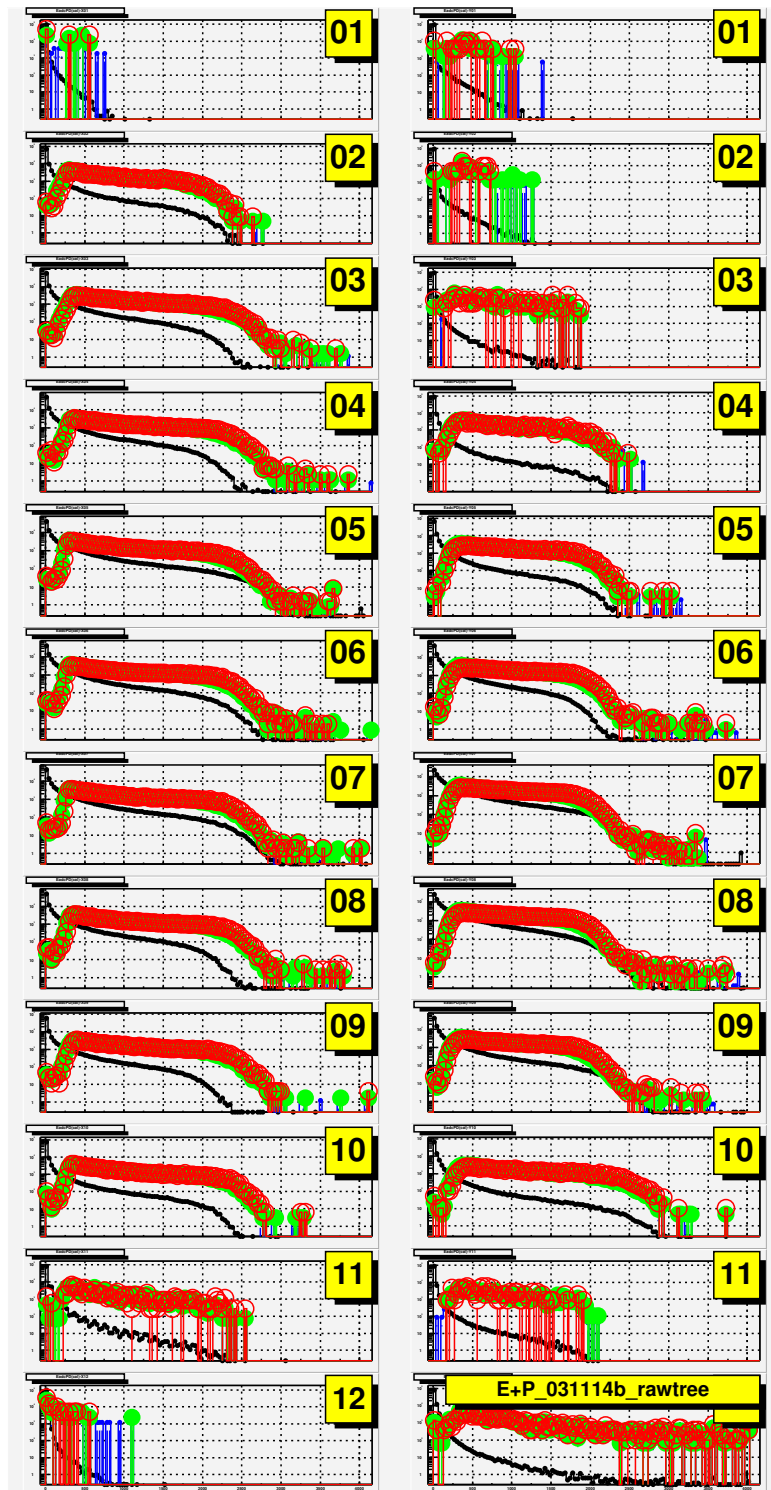
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- new intercalibration coefficients calculated using e-p data for the first time (up to now only e+GAS data).
- new HV Settings (A. Fomenko, program from april 2002) applied on november 14, 2003 at 18h02, Lumi Fill 3070

PDCh.	C	Uold	inter	Erec	anal.	final	dU	Unew	check	
	A	[V]	calib	/	sum	calib	[V]	[V]	calib	
	E		coeff	Erec'	ratio	coeff			coeff	
-----N-----										
1	X	0	1173	1.000	0.951	0.841	0.800	-34	1139	1.000
2	X	1	1251	1.000	0.951	0.841	0.800	-33	1218	1.000
3	X	2	1234	1.168	* 0.951	0.841	0.934	-11	1223	0.956
4	X	3	1207	1.147	* 0.951	0.841	0.917	-14	1193	0.994
5	X	4	1217	0.909	# 0.951	0.841	0.727	-47	1170	0.981
6	X	5	1181	1.029	# 0.951	0.841	0.823	-30	1151	1.005
7	X	6	1165	0.980	# 0.951	0.841	0.783	-37	1128	1.013
8	X	7	1186	1.137	# 0.951	0.841	0.909	-15	1171	1.001
9	X	8	1169	1.198	* 0.951	0.841	0.957	-7	1162	0.983
10	X	9	1198	1.110	* 0.951	0.841	0.888	-19	1179	1.003
11	X	10	1239	1.000	0.951	0.841	0.800	-35	1204	1.000
12	X	11	1225	1.000	0.951	0.841	0.800	-35	1190	1.000
1	Y	12	1220	1.000	1.079	1	1.079	+11	1231	1.000
2	Y	13	1274	1.000	1.079	1	1.079	+12	1286	1.000
3	Y	14	1300	1.000	1.079	1	1.079	+12	1312	1.000
4	Y	15	1295	0.978	* 1.079	1	1.055	+9	1304	0.990
5	Y	16	1251	1.000	# 1.079	1	1.079	+12	1263	1.000
6	Y	17	1263	1.079	# 1.079	1	1.164	+23	1286	1.023
7	Y	18	1258	0.855	# 1.079	1	0.922	-14	1244	0.987
8	Y	19	1233	0.945	# 1.079	1	1.020	+3	1236	1.006
9	Y	20	1311	0.868	* 1.079	1	0.936	-11	1300	1.009
10	Y	21	1279	1.000	1.079	1	1.079	+12	1291	1.000
11	Y	22	1359	1.000	1.079	1	1.079	+14	1373	1.000
12	Y	23	1343	1.000	1.079	1	1.079	+14	1357	1.000

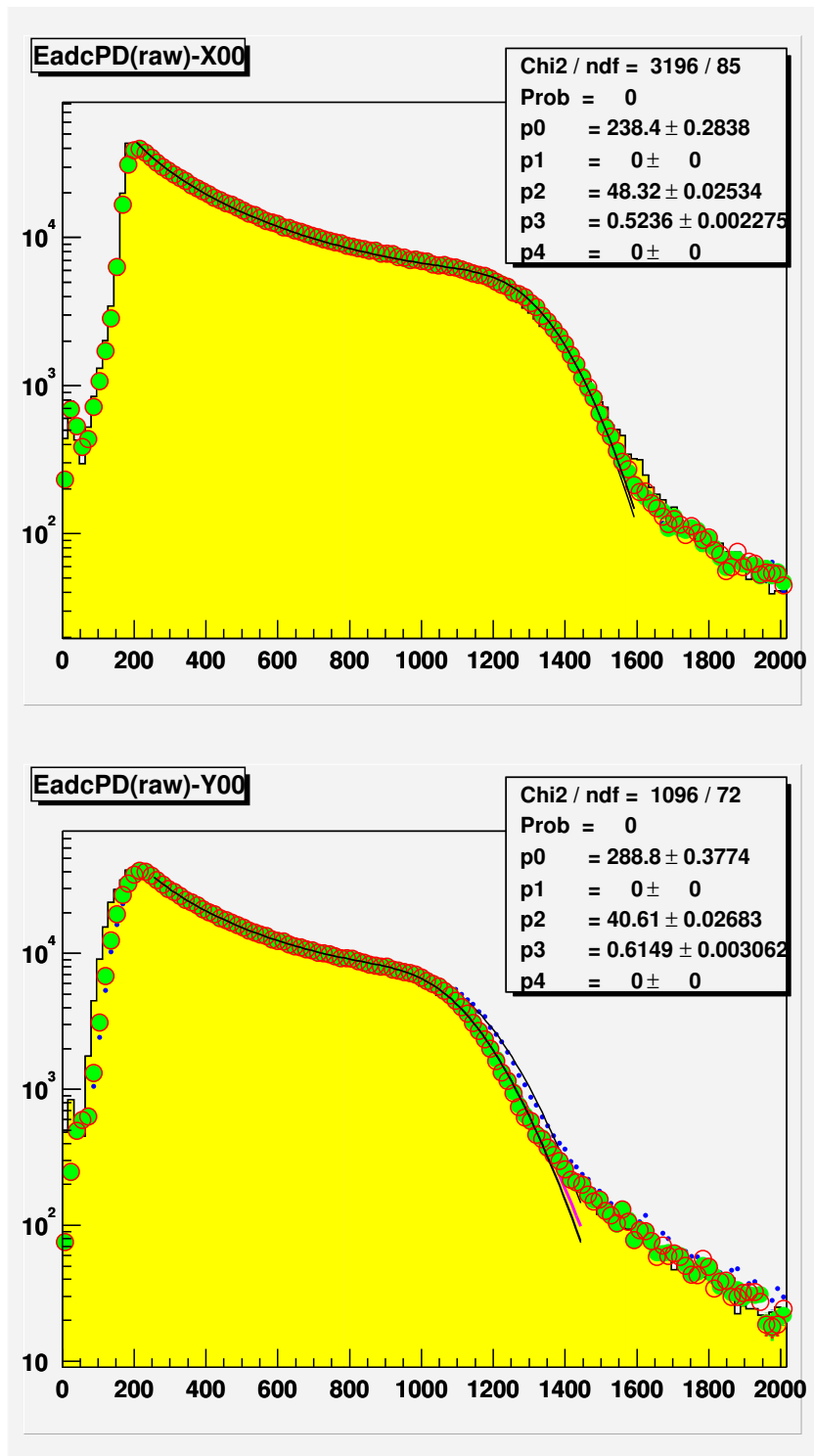
# Calibrated Channel energy spectra

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# Total energy spectra -> E-Scale

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# Changed Energy Scales

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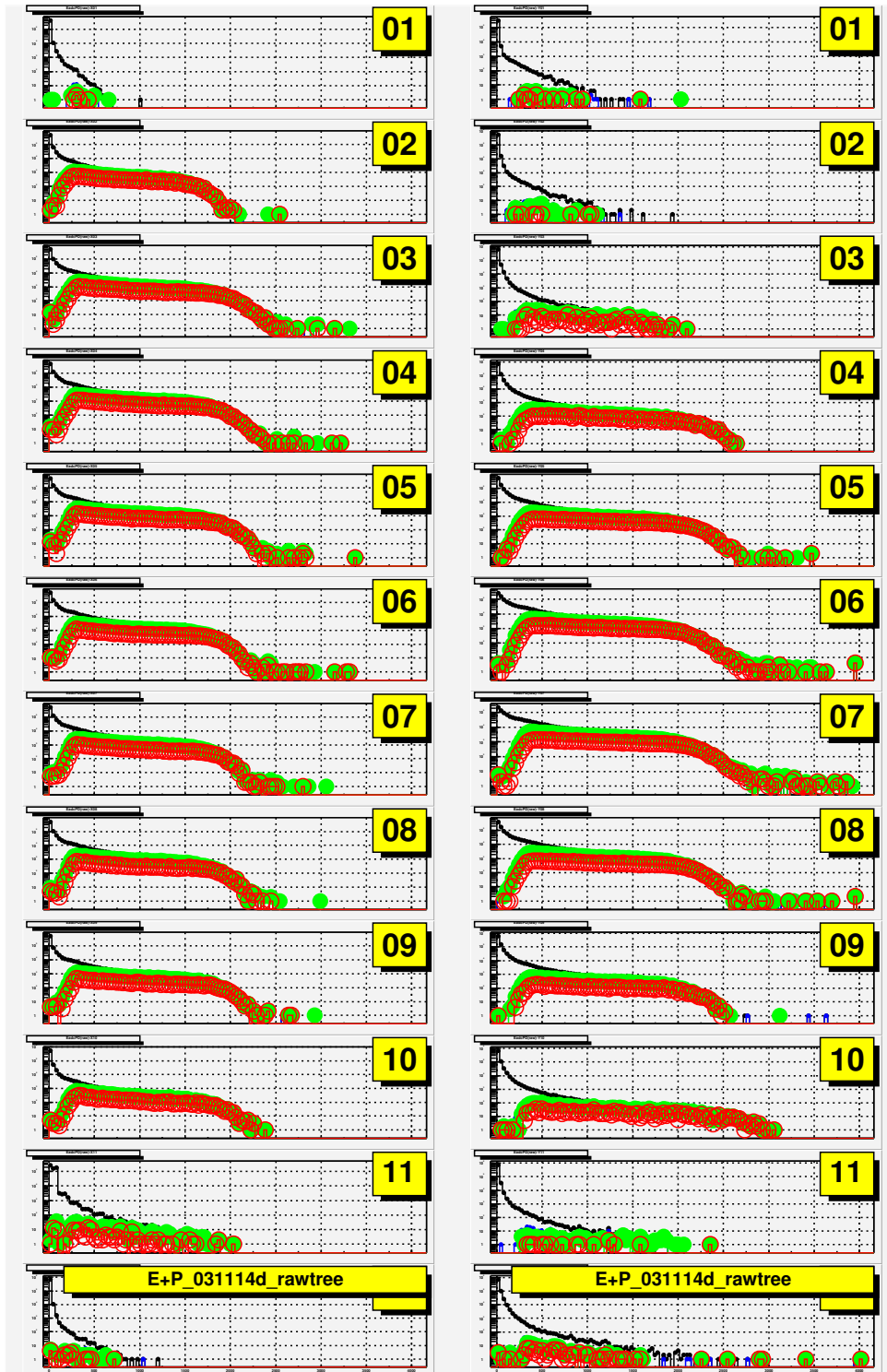
[ADCC/GeV]	before	after
-----+-----+-----		
Analog Sum X	48.316	40.495
Reconstr'd X	46.531	39.085
ratio	1.038	1.036
-----+-----+-----		
Analog Sum Y	40.613	40.928
Reconstr'd Y	43.838	44.285
ratio	0.926	0.924

- ✓ adjust analog sums (online lumi)
- ✓ analog sum Y unchanged
- ✓ align X analog sum on Y analog sum
- ✓ ratio  $E(\text{anal. sum})/E(\text{reconstructed}) = \text{const.}$
- ✓ adjust online counting threshold
  - ✓ from 176 (4.3GeV) to 205 (5GeV)
  - ✓ =>  $\sigma_{\text{BH}}$  (Lumi) was overestimated by 12%



# Channel energy spectra (after)

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# Channel flow spectra (after)

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