

# Bad BPMs Summary 2024

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# Bad BPMs Summary Script

- "Based" on Andreas' script from last year
- Intuitive commandline arguments with "glob" features

```
usage: bad_bpms_summary.py [-h] --dates DATES [DATES ...] [--root ROOT] [--outfile OUTFILE]
                             [--print_percentage PRINT_PERCENTAGE] [--accel_glob ACCEL_GLOB]
```

```
options:
  --dates DATES [DATES ...]
                        Dates to include in analysis. This should be either subfolders in
                        'root' or glob-patterns for those.
  --root ROOT
                        Path to the root directory, containing the dates.
                        Default: '/user/slops/data/LHC_DATA/OP_DATA/BetaBeat/'
  --outfile OUTFILE
                        Path to the file to write out.
  --print_percentage PRINT_PERCENTAGE
                        Print out BPMs that appear in more than this percentage of
                        measurements.
  --accel_glob ACCEL_GLOB
                        Accelerator name (glob for the sub-directories).
```

**Example:** All bad BPMs from 2024, written into file and all  $\geq 50\%$  in terminal

```
python -m omc3.scripts.bad_bpms_summary --dates 2024-*
                                         --accel_glob LHCB*
                                         --outfile bad_bpms_2024.txt
                                         --print_percentage 50
```

## Highest bad BPMs of LHCB1 from HARPY:

BPM	X	Y	Reasons
BPMSE.4L6.B1	100.0% (793/793)	81.7% (718/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.31L5.B1	19.7% (156/793)	94.3% (829/879)	EXACT_ZERO   NO_TUNE   TUN
BPMSX.4L8.B1	90.4% (717/793)	0.6% (5/879)	TUNE_CLEAN   NO_TUNE   SVD
BPMSX.7R1.B1	87.6% (695/793)	80.2% (705/879)	EXACT_ZERO   NO_TUNE   FLA
BPMWI.A5L4.B1	57.5% (456/793)	70.0% (615/879)	TUNE_CLEAN   NO_TUNE   SVD
BPM.15R8.B1	57.1% (453/793)	18.3% (161/879)	EXACT_ZERO   NO_TUNE   FLA
BPMSW.1L8.B1	53.3% (423/793)	6.6% (58/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.9L8.B1	21.7% (172/793)	50.4% (443/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.25L1.B1	2.5% (20/793)	47.7% (419/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.9L6.B1	45.6% (362/793)	0.5% (4/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.25R7.B1	44.9% (356/793)	25.7% (226/879)	EXACT_ZERO   NO_TUNE   TUN
BPMSX.4R8.B1	36.4% (289/793)	41.6% (366/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.16L8.B1	39.3% (312/793)	21.5% (189/879)	EXACT_ZERO   NO_TUNE   SVD
BPMSW.1R8.B1	39.0% (309/793)	17.5% (154/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.29R1.B1	38.3% (304/793)	1.5% (13/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.14R3.B1	20.2% (160/793)	35.5% (312/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.13L3.B1	0.6% (5/793)	34.7% (305/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.18R2.B1	19.2% (152/793)	34.5% (303/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.28L4.B1	1.4% (11/793)	34.4% (302/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.34R2.B1	4.3% (34/793)	33.9% (298/879)	EXACT_ZERO   NO_TUNE   TUN
BPM.7L3.B1	0.2% (2/793)	33.7% (296/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.19R6.B1	0.5% (4/793)	33.6% (295/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.25R2.B1	31.4% (249/793)	33.6% (295/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.9L3.B1	27.6% (219/793)	33.5% (294/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.17L2.B1	33.2% (263/793)	3.1% (27/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.15L1.B1	11.0% (87/793)	33.0% (290/879)	EXACT_ZERO   NO_TUNE   FLA
BPM_A.7R2.B1	32.7% (259/793)	2.5% (22/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.25L3.B1	13.5% (107/793)	30.1% (265/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.6R8.B1	29.9% (237/793)	2.5% (22/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.32R2.B1	29.8% (236/793)	0.5% (4/879)	EXACT_ZERO   NO_TUNE   FLA
BPM.13R3.B1	28.9% (229/793)	26.3% (231/879)	EXACT_ZERO   NO_TUNE   SVD
BPM.30R7.B1	28.4% (225/793)	0.7% (6/879)	EXACT_ZERO   NO_TUNE   FLA

## Highest bad BPMs of LHCB2 from HARPY:

	BPM	X	Y	Reasons
BPMSE.4R6.B2	100.0%	(691/691)	93.0% (643/691)	EXACT_ZERO   NO_TUNE   SVD
BPM SX.4L8.B2	96.5%	(667/691)	13.5% (93/691)	EXACT_ZERO   NO_TUNE   TUN
BPM SX.4L2.B2	27.8%	(192/691)	79.7% (551/691)	EXACT_ZERO   NO_TUNE   TUN
BPM WI.A5R4.B2	52.0%	(359/691)	79.6% (550/691)	TUNE_CLEAN   NO_TUNE   SVD
BPM WJ.A5L3.B2	19.5%	(135/691)	70.0% (484/691)	EXACT_ZERO   NO_TUNE   TUN
BPM SX.4R2.B2	62.7%	(433/691)	9.8% (68/691)	EXACT_ZERO   SVD_PEAK   FL
BPM.9R1.B2	14.2%	(98/691)	62.1% (429/691)	EXACT_ZERO   SVD_PEAK   FL
BPM.27L3.B2	4.0%	(28/691)	52.4% (362/691)	EXACT_ZERO   NO_TUNE   SVD
BPM.28R1.B2	1.0%	(7/691)	48.3% (334/691)	EXACT_ZERO   SVD_PEAK   FL
BPM.22L6.B2	19.5%	(135/691)	41.7% (288/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.16R1.B2	40.2%	(278/691)	0.3% (2/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.8R3.B2	39.1%	(270/691)	5.8% (40/691)	EXACT_ZERO   NO_TUNE   TUN
BPM YA.4L5.B2	0.6%	(4/691)	38.5% (266/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.21R6.B2	36.8%	(254/691)	4.9% (34/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.6L2.B2	35.2%	(243/691)	14.2% (98/691)	EXACT_ZERO   NO_TUNE   SVD
BPM WE.5R7.B2	34.6%	(239/691)	4.8% (33/691)	EXACT_ZERO   NO_TUNE   TUN
BPM.19R8.B2	34.4%	(238/691)	24.6% (170/691)	EXACT_ZERO   FLAT
BPM.31L8.B2	34.3%	(237/691)	9.6% (66/691)	EXACT_ZERO   NO_TUNE   TUN
BPM.23L5.B2	33.4%	(231/691)	0.4% (3/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.23L2.B2	33.3%	(230/691)	-	EXACT_ZERO   FLAT
BPM WB.4L5.B2	1.6%	(11/691)	32.7% (226/691)	EXACT_ZERO   NO_TUNE   TUN
BPM.24R5.B2	-	-	32.7% (226/691)	EXACT_ZERO   FLAT
BPM.9L6.B2	1.4%	(10/691)	32.1% (222/691)	EXACT_ZERO   NO_TUNE
BPM_A.7R8.B2	31.8%	(220/691)	2.3% (16/691)	EXACT_ZERO   NO_TUNE   SVD
BPM.12L6.B2	31.8%	(220/691)	0.7% (5/691)	EXACT_ZERO   NO_TUNE
BPM.31L7.B2	31.6%	(218/691)	18.4% (127/691)	EXACT_ZERO   NO_TUNE   TUN
BPM.32R2.B2	30.7%	(212/691)	25.3% (175/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.25L8.B2	8.0%	(55/691)	29.7% (205/691)	EXACT_ZERO   NO_TUNE   TUN
BPM.11R4.B2	29.4%	(203/691)	20.3% (140/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.10L2.B2	11.6%	(80/691)	28.6% (198/691)	EXACT_ZERO   NO_TUNE   FLA
BPM WB.4L2.B2	1.0%	(7/691)	27.2% (188/691)	EXACT_ZERO   NO_TUNE   FLA
BPM.13L7.B2	2.2%	(15/691)	27.1% (187/691)	EXACT_ZERO   NO_TUNE   FLA

## Highest bad BPMs of LHCb1 from IFOREST:

BPM	X	Y	Reasons
BPMR.6L8.B1	77.8% (7/9)	-	TUNEX   AMPX   NOISE_SCALE
BPM.28R3.B1	77.8% (7/9)	11.1% (1/9)	TUNEX   TUNEX   AMPX
BPMW.5L7.B1	66.7% (6/9)	11.1% (1/9)	AMPY   NOISE_SCALED   AMPX
BPM_A.7R1.B1	-	66.7% (6/9)	TUNEX   AMPY   NOISE_SCALE
BPMWI.4L2.B1	66.7% (6/9)	11.1% (1/9)	TUNEX   NOISE_SCALED   AMPX
BPMSY.4L5.B1	-	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPM.23R1.B1	-	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPM.20L7.B1	-	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPM.19L8.B1	-	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPM.16L7.B1	-	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPMSW.1R2.B1	11.1% (1/9)	55.6% (5/9)	TUNEX   AMPY   NOISE_SCALE
BPM.32L3.B1	-	44.4% (4/9)	TUNEX   AMPY
BPMSX.4L2.B1	22.2% (2/9)	44.4% (4/9)	TUNEX   AMPX   NOISE_SCALE
BPMSX.4R2.B1	44.4% (4/9)	11.1% (1/9)	TUNEX   NOISE_SCALED   AMPX
BPMSY.4L1.B1	44.4% (4/9)	11.1% (1/9)	TUNEX   NOISE_SCALED   AMPX
BPMSY.4R1.B1	-	44.4% (4/9)	TUNEX   AMPY   NOISE_SCALE
BPM.6L1.B1	-	33.3% (3/9)	AMPY   NOISE_SCALED
BPM.30L2.B1	33.3% (3/9)	-	AMPX
BPM.27L8.B1	-	33.3% (3/9)	TUNEX   AMPY   NOISE_SCALE
BPM.28L7.B1	-	33.3% (3/9)	TUNEX   AMPY
BPM.25R2.B1	33.3% (3/9)	-	AMPX
BPM.23R8.B1	11.1% (1/9)	33.3% (3/9)	AMPY   NOISE_SCALED   AMPX
BPM.25L1.B1	-	33.3% (3/9)	TUNEX   AMPY   NOISE_SCALE
BPM.33L3.B1	-	33.3% (3/9)	AMPY   NOISE_SCALED
BPMSX.4R8.B1	33.3% (3/9)	33.3% (3/9)	TUNEX   AMPY   TUNEX   AMPX
BPM.8R4.B1	-	33.3% (3/9)	TUNEX   NOISE_SCALED
BPM.28L1.B1	-	33.3% (3/9)	AMPY   NOISE_SCALED
BPMYB.5R6.B1	-	22.2% (2/9)	TUNEX   NOISE_SCALED
BPMYB.4L6.B1	-	22.2% (2/9)	TUNEX   AMPY   NOISE_SCALE
BPMYA.5L6.B1	22.2% (2/9)	-	TUNEX   NOISE_SCALED
BPMYB.5L2.B1	-	22.2% (2/9)	TUNEX
BPM.32L5.B1	22.2% (2/9)	-	TUNEX   AMPX

## Highest bad BPMs of LHCB2 from IFOREST:

BPM	X	Y	Reasons
BPM.28R3.B2	80.0% (4/5)	100.0% (5/5)	AMPY   AMPX
BPM.33R4.B2	100.0% (5/5)	-	TUNEX   AMPX   NOISE_SCALE
BPM.32L2.B2	-	100.0% (5/5)	AMPY
BPMWI.A5R4.B2	100.0% (5/5)	40.0% (2/5)	AMPY   NOISE_SCALED   AMPX
BPM.8R5.B2	-	100.0% (5/5)	TUNEY   AMPY   NOISE_SCALE
BPM.30L5.B2	-	100.0% (5/5)	AMPY
BPM.6L8.B2	-	80.0% (4/5)	AMPY   NOISE_SCALED
BPM.17R3.B2	80.0% (4/5)	-	AMPX
BPMW.4L3.B2	80.0% (4/5)	-	AMPX   NOISE_SCALED
BPMSX.4R8.B2	20.0% (1/5)	80.0% (4/5)	AMPY   AMPX   NOISE_SCALED
BPMWJ.A5L3.B2	80.0% (4/5)	20.0% (1/5)	AMPY   NOISE_SCALED   AMPX
BPMSX.4R2.B2	80.0% (4/5)	20.0% (1/5)	NOISE_SCALED   AMPX
BPM.22R7.B2	-	60.0% (3/5)	AMPY
BPM.27L7.B2	-	60.0% (3/5)	AMPY
BPM.20L5.B2	60.0% (3/5)	-	AMPX
BPM.15L7.B2	-	60.0% (3/5)	AMPY
BPM.31L7.B2	60.0% (3/5)	-	AMPX
BPM.19L4.B2	-	40.0% (2/5)	AMPY
BPMSX.4L2.B2	40.0% (2/5)	-	AMPX   NOISE_SCALED
BPMSW.1R1.B2	40.0% (2/5)	-	NOISE_SCALED   AMPX
BPMYB.6R4.B2	40.0% (2/5)	-	NOISE_SCALED   AMPX
BPM.21R3.B2	-	40.0% (2/5)	AMPY
BPM.16R3.B2	-	40.0% (2/5)	AMPY
BPM.15L8.B2	40.0% (2/5)	-	AMPX
BPM.26R7.B2	-	40.0% (2/5)	AMPY
BPM.22L6.B2	40.0% (2/5)	-	TUNEX   AMPX
BPM.19R8.B2	-	20.0% (1/5)	AMPY
BPM.19R4.B2	20.0% (1/5)	-	TUNEX
BPM.17L7.B2	20.0% (1/5)	-	AMPX
BPM.15R8.B2	-	20.0% (1/5)	AMPY
BPM.15R7.B2	-	20.0% (1/5)	AMPY
BPM.15R3.B2	-	20.0% (1/5)	AMPY

Thank you for your attention.