Sensing matrix result

Chiaki Hirose

How to measure sensing matrix

- Record data : Signals of WFS / signals of oplev
  Signals of WFS REFL:
  K1: ASC-
  REFL_QPD{A1/A2}_RF{17,45}_I_{YAW,PIT}_OUT_DQ
  Signals of WFS AS:
  K1: ASC- AS_QPD{A1/A2}_RF{17,45}_I_{YAW,PIT}_OUT_DQ
  Signals of oplev:
  K1: VIS-{mirrors}_TM_WIT_{P,Y}
- Number of time : 3

How to read figure

- Figure data

2022-11-22, center, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	126.254 +/- 0.003	152.303 +/- 0.003	355.036 +/- 0.007	404.745 +/- 0.008
2nd	125.139 +/- 0.008	152.19 +/- 0.006	354.055 +/- 0.007	403.78 +/- 0.008
3rd	125.139 +/- 0.003	149.044 +/- 0.012	354.105 +/- 0.007	403.585 +/- 0.008

Calculation error from data and coherence on Diaggui

- Compared data

Calculation average and error from 3 data

DoF	date	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
IMMT2_PIT	2022-11-22	125.5107 +/- 0.3717	151.179 +/- 1.068	354.3987 +/- 0.319	404.0367 +/- 0.3586
	2022-11-23	116.9167 +/- 1.1863	137.2823 +/- 2.0058	344.691 +/- 0.9423	393.2077 +/- 0.6352
	2022-11-24	88.3136 +/- 0.7708	109.818 +/- 1.1741	227.8403 +/- 1.292	205.9887 +/- 1.1716

2022-11-22

2022-11-22 center

2022-11-22, center, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-25.4302 +/- -0.261	-39.8257 +/- -0.222	314.796 +/- 0.063	350.015 +/- 0.07
2nd	-30.2356 +/- -0.068	-45.677 +/- -0.05	316.342 +/- 0.063	352.027 +/- 0.071
3rd	-29.7508 +/- -0.079	-44.3148 +/- -0.069	318.487 +/- 0.064	355.023 +/- 0.071

2022-11-22, center, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	126.254 +/- 0.003	152.303 +/- 0.003	355.036 +/- 0.007	404.745 +/- 0.008
2nd	125.139 +/- 0.008	152.19 +/- 0.006	354.055 +/- 0.007	403.78 +/- 0.008
3rd	125.139 +/- 0.003	149.044 +/- 0.012	354.105 +/- 0.007	403.585 +/- 0.008

2022-11-22, center, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	142.746 +/- 0.086	203.671 +/- 0.123	-464.028 +/- -0.093	-521.334 +/- -0.104
2nd	137.486 +/- 0.567	198.603 +/- 0.322	-466.271 +/- -0.093	-523.506 +/- -0.105
3rd	137.26 +/- 0.421	196.671 +/- 0.399	-462.006 +/- -0.093	-519.335 +/- -0.104

2022-11-22, center, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	26.0126 +/- 0.017	21.0558 +/- 0.073	402.744 +/- 0.081	458.725 +/- 0.092
2nd	25.4419 +/- 0.014	19.358 +/- 0.049	401.836 +/- 0.08	458.316 +/- 0.092
3rd	24.7983 +/- 0.055	19.4861 +/- 0.14	402.263 +/- 0.081	455.511 +/- 0.091

2022-11-22 beam spot shift +4mm pit

2022-11-22, Beam spot shift +4mm (ITM/ETM PIT -2urad), IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-31.0426 +/- -0.066	-46.2366 +/- -0.066	318.155 +/- 0.064	354.447 +/- 0.071
2nd	-34.7498 +/- -0.029	-49.6112 +/- -0.025	317.551 +/- 0.064	353.961 +/- 0.071
3rd	-34.9504 +/- -0.001	-42.6647 +/- -0.002	316.867 +/- 0.063	353.215 +/- 0.071

2022-11-22, Beam spot shift +4mm (ITM/ETM PIT -2urad), IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	122.23 +/- 0.002	147.718 +/- 0.003	357.721 +/- 0.007	409.367 +/- 0.008
2nd	122.281 +/- 0.007	148.735 +/- 0.006	359.402 +/- 0.007	410.507 +/- 0.008
3rd	123.192 +/- 0.002	147.035 +/- 0.012	359.453 +/- 0.007	412.743 +/- 0.008

2022-11-22, Beam spot shift +4mm (ITM/ETM PIT -2urad), PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	153.583 +/- 0.059	215.446 +/- 0.009	-472.781 +/- -0.009	-521.334 +/- -0.01
2nd	158.622 +/- 0.01	222.364 +/- 0.013	-473.865 +/- -0.009	-534.527 +/- -0.107
3rd	158.9 +/- 0.488	221.041 +/- 0.449	-473.847 +/- -0.095	-533.238 +/- -0.107

2022-11-22, Beam spot shift +4mm (ITM/ETM PIT -2urad), PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	22.147 +/- 0.048	15.9217 +/- 0.081	400.309 +/- 0.08	458.789 +/- 0.092
2nd	19.7354 +/- 0.017	12.6725 +/- 0.154	400.44 +/- 0.08	457.638 +/- 0.092
3rd	19.5191 +/- 0.017	12.9866 +/- 0.022	400.394 +/- 0.08	460.21 +/- 0.092

2022-11-23

2022-11-23 center

2022-11-23, center, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-30.2537 +/- -0.045	-46.2587 +/- -0.036	329.676 +/- 0.066	366.099 +/- 0.073
2nd	-32.618 +/- -0.06	-48.2235 +/- -0.055	329.051 +/- 0.066	365.417 +/- 0.073
3rd	-29.8882 +/- -0.054	-44.9689 +/- -0.049	327.221 +/- 0.066	363.931 +/- 0.073

2022-11-23, center, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	118.319 +/- 0.002	139.532 +/- 0.003	345.389 +/- 0.007	393.803 +/- 0.008
2nd	117.873 +/- 0.007	139.034 +/- 0.006	345.858 +/- 0.007	393.882 +/- 0.008
3rd	114.558 +/- 0.002	133.281 +/- 0.003	342.826 +/- 0.007	391.938 +/- 0.008

2022-11-23, center, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	21.8846 +/- 0.015	14.5918 +/- 0.127	396.751 +/- 0.079	453.202 +/- 0.091
2nd	17.8721 +/- 0.011	9.95943 +/- 0.053	396.335 +/- 0.079	451.919 +/- 0.091

2022-11-23, center, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	20.1119 +/- 0.026	13.85 +/- 0.064	359.863 +/- 0.072	450.487 +/- 0.09
2nd	24.798 +/- 0.055	19.486 +/- 0.14	402.263 +/- 0.081	455.511 +/- 0.091

2022-11-23, center, ETMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-1382.5 +/- -0.277	-1787 +/- -0.358	220.392 +/- 0.177	212.539 +/- 0.171
2nd	-1395 +/- -0.279	-1798 +/- -0.36	197 +/- 0.043	178 +/- 0.118
3rd	-1386.26 +/- -0.278	-1786.4 +/- -0.358	212.14 +/- 0.042	191.673 +/- 0.263

2022-11-23, center, ETMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-1397.34 +/- -0.28	-1860.44 +/- -0.373	782.86 +/- 0.157	850.895 +/- 0.17
2nd	-1410.33 +/- -0.282	-1874.73 +/- -0.376	776.455 +/- 0.156	841.891 +/- 0.169
3rd	-1407.64 +/- -0.282	-1871.92 +/- -0.375	781.4 +/- 0.157	852.937 +/- 0.171

2022-11-24

2022-11-24 center/ITMY, ETMY

2022-11-24, center, ITMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	530.713 +/- 0.006	729.642 +/- 0.02	-1203.89 +/- -0.009	-1093.79 +/- -0.012
2nd	528.014 +/- 0.021	721.206 +/- 0.009	-1199.45 +/- -0.005	-1086.51 +/- -0.005
3rd	539.31 +/- 0.006	739.071 +/- 0.021	-1199.69 +/- -0.017	-1088.92 +/- -0.009

2022-11-24, center, ITMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-944.505 +/- -0.047	-1292.39 +/- -0.053	1471.1 +/- 0.015	1289.32 +/- 0.014
2nd	-958.882 +/- -0.039	-1317.2 +/- -0.046	1474.52 +/- 0.053	1291.68 +/- 0.034
3rd	-942.058 +/- -0.069	-1288.27 +/- -0.086	1471.02 +/- 0.033	1285.72 +/- 0.054

2022-11-24, center, ETMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-936.923 +/- -0.019	-1236.7 +/- -0.005	185.065 +/- 0.051	164.046 +/- 0.103
2nd	-940.256 +/- -0.019	-1239.48 +/- -0.015	173.162 +/- 0.008	149.766 +/- 0.028
3rd	-933.318 +/- -0.019	-1230.01 +/- -0.005	166.572 +/- 0.156	145.338 +/- 0.228

2022-11-24, center, ETMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-949.861 +/- -0.003	-1280.43 +/- -0.014	539.567 +/- 0.07	476.668 +/- 0.086
2nd	-931.027 +/- -0.019	-1253.75 +/- -0.044	518.065 +/- 0.121	454.774 +/- 0.096
3rd	-942.393 +/- -0.009	-1269.12 +/- -0.014	536.757 +/- 0.031	471.009 +/- 0.035

2022-11-24 center/PR2, IMMT2

2022-11-24, center, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	153.583 +/- 0.059	215.446 +/- 0.009	-472.781 +/- -0.009	-532.357 +/- -0.011
2nd	158.622 +/- 0.01	222.364 +/- 0.013	-473.865 +/- -0.009	-534.527 +/- -0.011
3rd	158.9 +/- 0.488	221.041 +/- 0.449	-473.847 +/- -0.009	-533.238 +/- -0.011

2022-11-24, center, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	21.22239 +/- 0.011	21.8131 +/- 0.037	265.613 +/- 0.0	241.866 +/- 0.005
2nd	21.913 +/- 0.003	22.0346 +/- 0.012	266.498 +/- 0.005	243.303 +/- 0.005
3rd	20.8032 +/- 0.014	20.0331 +/- 0.05	263.98 +/- 0.005	241.453 +/- 0.005

2022-11-24, center, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-16.7881 +/- -0.062	-25.8878 +/- -0.06	206.966 +/- 0.0	176.116 +/- 0.002
2nd	-16.8102 +/- -0.06	-26.5215 +/- -0.055	206.472 +/- 0.001	175.899 +/- 0.001

2022-11-24, center, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	87.5667 +/- 0.005	108.488 +/- 0.008	225.434 +/- 0.001	203.756 +/- 0.001
2nd	89.8549 +/- 0.005	112.159 +/- 0.009	228.228 +/- 0.001	206.489 +/- 0.0
3rd	87.5191 +/- 0.002	108.807 +/- 0.003	229.859 +/- 0.002	207.721 +/- 0.0

2022-11-24 center/PR2, IMMT2 on AS

2022-11-24, center AS port, PR2_YAW

	QPD1 RF17	QPD2 RF17
1st	2.12 +/- 0.0	2.35159 +/- 0.0
2nd	1.9453 +/- 0.0	2.3954 +/- 0.0
3rd	1.883 +/- 0.001	2.377 +/- 0.0

2022-11-24, center AS port, PR2_PIT

	QPD1 RF17	QPD2 RF17
1st	0.694 +/- 0.0	-1.1359 +/- -0.0
2nd	0.5877 +/- 0.0	-1.177 +/- -0.0
3rd	0.6385 +/- 0.0	-1.1801 +/- -0.0

2022-11-24, center AS port, IMMT2_YAW

	QPD1 RF17	QPD2 RF17
1st	0.992178 +/- 0.0	1.11089 +/- 0.0
2nd	1.01102 +/- 0.0	1.09373 +/- 0.0

2022-11-24, center AS port, IMMT2_PIT

	QPD1 RF17	QPD2 RF17
1st	-0.07591 +/- -0.003	-1.88036 +/- -0.0
2nd	-0.111 +/- -0.002	-1.89669 +/- -0.0
3rd	-0.0806 +/- -0.0	-1.8831 +/- -0.0

2022-11-24 beam shift +4mm yaw/PR2,IMMT2

2022-11-24, beam shift p 4mm yaw, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	101.89 +/- 0.02	144.216 +/- 0.029	-316.796 +/- -0.063	-279.761 +/- -0.056
2nd	98.9043 +/- 0.04	139.056 +/- 0.028	-319.569 +/- -0.064	-281.541 +/- -0.056
3rd	98.9203 +/- 0.02	140.057 +/- 0.028	-317.728 +/- -0.064	-280.578 +/- -0.056

2022-11-24, beam shift p 4mm yaw, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	15.2069 +/- 0.012	12.9548 +/- 0.042	269.219 +/- 0.054	246.869 +/- 0.049
2nd	15.8828 +/- 0.006	14.9676 +/- 0.015	270.112 +/- 0.054	247.04 +/- 0.049
3rd	15.4945 +/- 0.006	14.2935 +/- 0.017	269.869 +/- 0.054	246.641 +/- 0.049

2022-11-24, beam shift p 4mm yaw, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-19.963 +/- -0.032	-30.0784 +/- -0.036	211.412 +/- 0.042	180.681 +/- 0.036
2nd	-23.98 +/- -0.019	-34.9591 +/- -0.021	214.515 +/- 0.043	183.161 +/- 0.037
3rd	-20.2071 +/- -0.059	-29.9293 +/- -0.079	212.71 +/- 0.043	181.709 +/- 0.036

2022-11-24, beam shift p 4mm yaw, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	81.9341 +/- 0.016	101.761 +/- 0.02	234.363 +/- 0.047	212.873 +/- 0.043
2nd	82.3988 +/- 0.017	102.926 +/- 0.021	235.569 +/- 0.047	214.025 +/- 0.043
3rd	81.8459 +/- 0.016	101.774 +/- 0.02	235.757 +/- 0.047	214.129 +/- 0.043

2022-11-24 beam shift +4mm yaw /ITMY,ETMY

2022-11-24, beam shift p 4mm yaw, ITMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	544.931 +/- 0.109	747.402 +/- 0.15	-1222.02 +/- -0.245	-1115.12 +/- -0.223
2nd	553.928 +/- 0.111	759.405 +/- 0.152	-1231.62 +/- -0.247	-1122.67 +/- -0.225
3rd	542.598 +/- 0.109	746.176 +/- 0.149	-1227.19 +/- -0.246	-1118.08 +/- -0.224

2022-11-24, beam shift p 4mm yaw, ITMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-954.873 +/- -0.191	-1307.86 +/- -0.262	1507.22 +/- 0.302	1325.5 +/- 0.265
2nd	-973.861 +/- -0.195	-1334.26 +/- -0.267	1512.66 +/- 0.303	1329.47 +/- 0.266
3rd	-986.593 +/- -0.198	-1340.54 +/- -0.269	1528.72 +/- 0.306	1341.23 +/- 0.269

2022-11-24, beam shift p 4mm yaw, ETMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-935.943 +/- -0.187	-1234.47 +/- -0.247	201.222 +/- 0.081	176.667 +/- 0.106
2nd	-942.126 +/- -0.189	-1240.79 +/- -0.249	189.1 +/- 0.114	161.717 +/- 0.13
3rd	-928.709 +/- -0.186	-1229.35 +/- -0.246	205.8 +/- 0.041	186.27 +/- 0.075

2022-11-24, beam shift p 4mm yaw, ETMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-942.257 +/- -0.189	-1273.61 +/- -0.255	562.96 +/- 0.113	499.257 +/- 0.1
2nd	-945.187 +/- -0.189	-1271.83 +/- -0.255	557.766 +/- 0.112	488.679 +/- 0.098
3rd	-942.949 +/- -0.189	-1269.2 +/- -0.254	552.838 +/- 0.222	486.299 +/- 0.195

2022-11-24 beam shift -4mm yaw/PR2,IMMT2

2022-11-24, beam shift m 4mm yaw, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	85.9092 +/- 0.052	122.712 +/- 0.049	-303.828 +/- -0.061	-267.314 +/- -0.054
2nd	84.0731 +/- 0.068	120.523 +/- 0.097	-302.756 +/- -0.061	-266.279 +/- -0.053
3rd	85.9837 +/- 0.069	122.584 +/- 0.099	-304.766 +/- -0.061	-268.067 +/- -0.054

2022-11-24, beam shift m 4mm yaw, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	26.8052 +/- 0.022	28.3425 +/- 0.052	265.753 +/- 0.053	241.752 +/- 0.048
2nd	26.0482 +/- 0.021	27.6196 +/- 0.062	265.018 +/- 0.053	241.043 +/- 0.048
3rd	27.5037 +/- 0.011	29.5048 +/- 0.018	264.899 +/- 0.053	240.836 +/- 0.048

2022-11-24, beam shift m 4mm yaw, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-11.0448 +/- -0.325	-19.5104 +/- -0.295	205.349 +/- 0.041	175.028 +/- 0.035
2nd	-14.7823 +/- -0.174	-23.2397 +/- -0.161	206.411 +/- 0.041	175.67 +/- 0.035
3rd	-13.873 +/- -0.106	-22.7688 +/- -0.079	206.241 +/- 0.041	175.942 +/- 0.035

2022-11-24, beam shift m 4mm yaw, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	88.3961 +/- 0.018	109.838 +/- 0.022	226.721 +/- 0.045	205.597 +/- 0.041
2nd	91.0721 +/- 0.018	114.32 +/- 0.023	232.9 +/- 0.047	209.698 +/- 0.042
3rd	91.3335 +/- 0.018	113.868 +/- 0.023	230.63 +/- 0.046	208.108 +/- 0.042

2022-11-24 beam shift -4mm yaw /ITMY,ETMY

2022-11-24, beam shift m 4mm yaw, ITMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	492.127 +/- 0.099	677.176 +/- 0.136	-1171.4 +/- -0.235	-1057.98 +/- -0.212
2nd	500.805 +/- 0.1	692.289 +/- 0.139	-1171.1 +/- -0.235	-1057.65 +/- -0.212
3rd	491.118 +/- 0.098	674.933 +/- 0.135	-1170.29 +/- -0.234	-1056.75 +/- -0.212

2022-11-24, beam shift m 4mm yaw, ITMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-898.309 +/- -0.18	-1237.96 +/- -0.248	1406.1 +/- 0.282	1235.28 +/- 0.247
2nd	-917.829 +/- -0.184	-1260.14 +/- -0.252	1425.84 +/- 0.286	1243.5 +/- 0.249
3rd	-917.033 +/- -0.184	-1263.3 +/- -0.253	1415.58 +/- 0.284	1239.92 +/- 0.248

2022-11-24, beam shift m 4mm yaw, ETMY_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-919.675 +/- -0.184	-1211.17 +/- -0.243	145.801 +/- 0.058	122.831 +/- 0.149
2nd	495.933 +/- 0.099	684.974 +/- 0.137	1166.18 +/- 0.234	1055.86 +/- 0.211
3rd	-906.227 +/- -0.182	-1195.49 +/- -0.239	139.714 +/- 0.141	121.825 +/- 0.197

2022-11-24, beam shift m 4mm yaw, ETMY_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-913.411 +/- -0.183	-1241.72 +/- -0.249	513.481 +/- 0.103	452.506 +/- 0.091
2nd	-926.353 +/- -0.186	-1248.87 +/- -0.25	516.335 +/- 0.103	454.253 +/- 0.091
3rd	-924.564 +/- -0.185	-1240.8 +/- -0.249	504.717 +/- 0.101	443.764 +/- 0.089

2022-11-28

2022-11-28 beam shift +4mm yaw/PR2,IMMT2

2022-11-28, beam shift p 4mm yaw, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	126.449 +/- 0.025	192.768 +/- 0.039	-418.434 +/- -0.084	-377.69 +/- -0.076
2nd	121.132 +/- 0.049	184.173 +/- 0.074	-418.99 +/- -0.084	-378.134 +/- -0.076
3rd	126.343 +/- 0.025	191.34 +/- 0.038	-418.564 +/- -0.084	-376.95 +/- -0.076

2022-11-28, beam shift p 4mm yaw, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	19.6676 +/- 0.016	15.4764 +/- 0.064	351.08 +/- 0.07	330.196 +/- 0.066
2nd	21.4222 +/- 0.048	18.3107 +/- 0.143	349.365 +/- 0.07	328.539 +/- 0.066
3rd	20.7825 +/- 0.046	16.8484 +/- 0.139	349.189 +/- 0.07	328.635 +/- 0.066

2022-11-28, beam shift p 4mm yaw, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-28.8024 +/- -0.023	-45.0723 +/- -0.018	275.782 +/- 0.055	239.135 +/- 0.048
2nd	-31.0057 +/- -0.012	-49.4011 +/- -0.02	273.69 +/- 0.055	237.844 +/- 0.048
3rd	-28.7202 +/- -0.026	-46.8698 +/- -0.038	275.064 +/- 0.055	239.112 +/- 0.048

2022-11-28, beam shift p 4mm yaw, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	105.064 +/- 0.021	135.256 +/- 0.054	305.677 +/- 0.061	284.462 +/- 0.057
2nd	103.543 +/- 0.021	132.197 +/- 0.026	306.795 +/- 0.061	286.548 +/- 0.057
3rd	104.112 +/- 0.021	133.28 +/- 0.027	304.218 +/- 0.061	284.054 +/- 0.057

2022-11-28 beam shift -4mm yaw/PR2,IMMT2

2022-11-28, beam shift m 4mm yaw, PR2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	114.037 +/- 0.023	180.016 +/- 0.036	-396.829 +/- -0.079	-359.072 +/- -0.072
2nd	117.778 +/- 0.024	185.371 +/- 0.037	-394.641 +/- -0.079	-356.399 +/- -0.071
3rd	112.54 +/- 0.023	178.06 +/- 0.036	-396.008 +/- -0.079	-357.216 +/- -0.072

2022-11-28, beam shift m 4mm yaw, PR2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	30.1782 +/- 0.049	29.3739 +/- 0.109	332.762 +/- 0.067	311.315 +/- 0.062
2nd	30.4569 +/- 0.037	29.9267 +/- 0.012	330.03 +/- 0.066	308.201 +/- 0.062
3rd	32.6057 +/- 0.039	33.9066 +/- 0.014	334.473 +/- 0.067	312.355 +/- 0.063

2022-11-28, beam shift m 4mm yaw, IMMT2_YAW

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	-21.3287 +/- -0.07	-40.0353 +/- -0.065	264.314 +/- 0.053	230.895 +/- 0.046
2nd	-22.3879 +/- -0.05	-39.8575 +/- -0.048	265.267 +/- 0.053	230.412 +/- 0.046
3rd	-19.0637 +/- -0.137	-37.4519 +/- -0.162	264.164 +/- 0.053	230.208 +/- 0.046

2022-11-28, beam shift m 4mm yaw, IMMT2_PIT

	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
1st	109.102 +/- 0.022	141.87 +/- 0.028	288.07 +/- 0.058	266.222 +/- 0.053
2nd	108.52 +/- 0.022	140.722 +/- 0.028	289.265 +/- 0.058	266.961 +/- 0.053
3rd	110.854 +/- 0.022	144.534 +/- 0.029	286.855 +/- 0.057	265.363 +/- 0.053

Compared to date

Center / IMMT2, PR2

center,refl

		QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
DoF	date				
IMMT2_PIT	2022-11-22	125.5107 +/- 0.3717	151.179 +/- 1.068	354.3987 +/- 0.319	404.0367 +/- 0.3586
	2022-11-23	116.9167 +/- 1.1863	137.2823 +/- 2.0058	344.691 +/- 0.9423	393.2077 +/- 0.6352
	2022-11-24	88.3136 +/- 0.7708	109.818 +/- 1.1741	227.8403 +/- 1.292	205.9887 +/- 1.1716
IMMT2_YAW	2022-11-22	-28.4722 +/- 1.5274	-43.2725 +/- 1.7677	316.5417 +/- 1.0702	352.355 +/- 1.455
	2022-11-23	-30.92 +/- 0.8555	-46.4837 +/- 0.9462	328.6493 +/- 0.7366	365.149 +/- 0.64
	2022-11-24	-16.7991 +/- 0.011	-26.2046 +/- 0.3169	206.719 +/- 0.247	176.0075 +/- 0.1085
PR2_PIT	2022-11-22	25.4176 +/- 0.3507	19.9666 +/- 0.5458	402.281 +/- 0.2623	457.5173 +/- 1.0101
	2022-11-23	22.4549 +/- 2.343	16.668 +/- 2.818	381.063 +/- 21.2	452.999 +/- 2.512
	2022-11-24	21.3129 +/- 0.3235	21.2936 +/- 0.6335	265.3637 +/- 0.7375	242.2073 +/- 0.5607
PR2_YAW	2022-11-22	139.164 +/- 1.7922	199.6483 +/- 2.0872	-464.1017 +/- 1.2318	-521.3917 +/- 1.2044
	2022-11-23	19.8783 +/- 2.0062	12.2756 +/- 2.3162	396.543 +/- 0.208	452.5605 +/- 0.6415
	2022-11-24	157.035 +/- 1.7279	219.617 +/- 2.1202	-473.4977 +/- 0.3584	-533.374 +/- 0.6301

center,as

		QPD1 RF17	QPD2 RF17
DoF	date		
IMMT2_PIT	2022-11-24	-0.0892 +/- 0.011	-1.8867 +/- 0.005
IMMT2_YAW	2022-11-24	1.0016 +/- 0.0094	1.1023 +/- 0.0086
PR2_PIT	2022-11-24	0.6401 +/- 0.0307	-1.1643 +/- 0.0142
PR2_YAW	2022-11-24	1.9828 +/- 0.0709	2.3747 +/- 0.0127

Center / ITMY,ETMY

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center
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DoF	date	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
ETMY_PIT	2022-11-23	-1387.92 +/- 3.7027	-1790.4667 +/- 3.7706	209.844 +/- 6.8496	194.0707 +/- 10.0424
	2022-11-24	-936.8323 +/- 2.0033	-1235.3967 +/- 2.8104	174.933 +/- 5.4114	153.05 +/- 5.6446
ETMY_YAW	2022-11-23	-1405.1033 +/- 3.9586	-1869.03 +/- 4.3709	780.2383 +/- 1.938	848.5743 +/- 3.3933
	2022-11-24	-941.0937 +/- 5.4756	-1267.7667 +/- 7.7315	531.463 +/- 6.7479	467.4837 +/- 6.5614

DoF	date	QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
ITMY_PIT	2022-11-24	532.679 +/- 3.4058	729.973 +/- 5.1598	-1201.01 +/- 1.4417	-1089.74 +/- 2.1412
ITMY_YAW	2022-11-24	-948.4817 +/- 5.2479	-1299.2867 +/- 9.0353	1472.2133 +/- 1.1536	1288.9067 +/- 1.7329

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Beam shift +4mm yaw

beam shift p 4mm yaw

		QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
DoF	date				
IMMT2_PIT	2022-11-24	82.0596 +/- 0.1715	102.1537 +/- 0.3862	235.2297 +/- 0.4367	213.6757 +/- 0.4025
	2022-11-28	104.2397 +/- 0.4437	133.5777 +/- 0.8955	305.5633 +/- 0.7461	285.0213 +/- 0.7724
IMMT2_YAW	2022-11-24	-21.3834 +/- 1.3002	-31.6556 +/- 1.6523	212.879 +/- 0.8997	181.8503 +/- 0.7194
	2022-11-28	-29.5094 +/- 0.7485	-47.1144 +/- 1.2556	274.8453 +/- 0.6137	238.697 +/- 0.4266
PR2_PIT	2022-11-24	15.5281 +/- 0.1958	14.072 +/- 0.5915	269.7333 +/- 0.2666	246.85 +/- 0.1156
	2022-11-28	20.6241 +/- 0.5127	16.8785 +/- 0.8183	349.878 +/- 0.6031	329.1233 +/- 0.537
PR2_YAW	2022-11-24	99.9049 +/- 0.9926	141.1097 +/- 1.5798	-318.031 +/- 0.8147	-280.6267 +/- 0.5144
	2022-11-28	124.6413 +/- 1.7549	189.427 +/- 2.6591	-418.6627 +/- 0.1679	-377.5913 +/- 0.3453

Beam shift -4mm yaw

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beam shift m 4mm yaw
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		QPD1 RF17	QPD1 RF45	QPD2 RF17	QPD2 RF45
DoF	date				
IMMT2_PIT	2022-11-24	90.2672 +/- 0.9386	112.6753 +/- 1.4247	230.0837 +/- 1.8045	207.801 +/- 1.1938
	2022-11-28	109.492 +/- 0.7014	142.3753 +/- 1.1291	288.0633 +/- 0.6957	266.182 +/- 0.4617
IMMT2_YAW	2022-11-24	-13.2334 +/- 1.1253	-21.8396 +/- 1.1725	206.0003 +/- 0.3293	175.5467 +/- 0.271
	2022-11-28	-20.9268 +/- 0.9804	-39.1149 +/- 0.8331	264.5817 +/- 0.3454	230.505 +/- 0.2037
PR2_PIT	2022-11-24	26.7857 +/- 0.4203	28.489 +/- 0.5491	265.2233 +/- 0.2671	241.2103 +/- 0.2773
	2022-11-28	31.0803 +/- 0.7669	31.0691 +/- 1.4277	332.4217 +/- 1.2938	310.6237 +/- 1.248
PR2_YAW	2022-11-24	85.322 +/- 0.6248	121.9397 +/- 0.7093	-303.7833 +/- 0.5807	-267.22 +/- 0.5183
	2022-11-28	114.785 +/- 1.5576	181.149 +/- 2.1852	-395.826 +/- 0.6381	-357.5623 +/- 0.7908