

Ideals
Surveys
Calculations

	x (m)	y (m)	z (m)
Pair Spec	-80.68860	103.35526	-417.75288
Beamline	-80.60000	103.35526	

	2019pre			2015			2019post			2021		
	x (m)	y (m)	z (m)	x* (mm)	y* (mm)	z* (mm)	x (m)	y (m)	z (m)	x (m)	y (m)	z (m)
Top A	-80.30088	103.58880	-418.74662	-298.42	233.64	939.16	-80.30184	103.58908	-418.74627	-80.30171	103.58924	-418.74433
Top B	-80.30086	103.58874	-418.89669	-298.01	233.81	1089.09	-80.30202	103.58890	-418.89621	-80.30187	103.58978	-418.89425
Top C	-81.11627	103.58874	-418.74792	516.81	233.17	938.23	-81.11611	103.58915	-418.74847	-81.11727	103.58764	-418.74459
Top D	-81.11642	103.58889	-418.89830	517.38	233.22	1088.19	-81.11655	103.58828	-418.89895	-81.11765	103.58804	-418.89441
Bottom A	-80.30148	103.12429	-418.74398	-299.90	-232.19	937.27	-80.30153	103.12427	-418.74434	-80.30011	103.12456	-418.74266
Bottom B	-80.30415	103.12434	-418.89293	-296.76	-232.51	1086.27	-80.30432	103.12426	-418.89332	-80.30292	103.12451	-418.89184
Bottom C	-81.11878	103.12438	-418.74400	517.23	-231.68	935.71	-81.11993	103.12426	-418.74191	-81.11744	103.12443	-418.74198
Bottom D	-81.11856	103.12416	-418.89498	517.54	-231.72	1085.80	-81.12040	103.12410	-418.89518	-81.11738	103.12416	-418.89222

\*^ is relative to ideal Beamline/PairSpec  
Positive-x is assumed to be beam-right, contrary to documentation

	2015			2019pre-2015			2019 post-pre			2021-2019pre		
	x (m)	y (m)	z (m)	dx (mm)	dy (mm)	dz (mm)	dx (mm)	dy (mm)	dz (mm)	dx (mm)	dy (mm)	dz (mm)
Top A	-80.30158	103.5889	-418.69204	0.70	-0.10	-54.58	-0.96000	0.28000	0.35000	-0.83000	0.44000	2.29000
Top B	-80.30199	103.58907	-418.84197	1.13	-0.33	-54.72	-1.16000	0.16000	0.48000	-1.01000	1.04000	2.44000
Top C	-81.11681	103.58843	-418.69111	0.54	0.31	-56.81	0.16000	0.41000	-0.55000	-1.00000	-1.10000	3.33000
Top D	-81.11738	103.58848	-418.84107	0.96	0.41	-57.23	-0.13000	-0.61000	-0.65000	-1.23000	-0.85000	3.89000
Bottom A	-80.30011	103.12307	-418.69015	-1.38	1.22	-53.83	-0.05000	-0.02000	-0.36000	1.37000	0.27000	1.32000
Bottom B	-80.30324	103.12275	-418.83915	-0.91	1.59	-53.78	-0.17000	-0.08000	-0.39000	1.23000	0.17000	1.09000
Bottom C	-81.11723	103.12358	-418.68859	-1.55	0.80	-55.41	-1.15000	-0.12000	2.09000	1.34000	0.05000	2.02000
Bottom D	-81.11754	103.12354	-418.83868	-1.02	0.62	-56.30	-1.84000	-0.06000	-0.20000	1.18000	0.00000	2.76000
Average	-80.71		-418.77	-0.19		-55.33				+1 and -1	top rotated	2.39250

The 2 mm dz must be human error, and dx isn't believable either.

In ECal3, the only significant change relative to 2019 that is supported is dz.

Based on comparisons, I conclude the 2019post has the issues denoted in red, and use the 2019pre for comparison with 2021