SPLAT Baseline Coordinate Definitions

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In this document I summarize the coordinate definitions for the three mirrors in the TMA design filename SPLAT_Base _Fwd.zmx, which can be found in `https://github.com/patogallardo/zemax_tools/tree/master/design_analysis/SPLAT_baseline_20210523/SPLAT_Base_Fwd.zmx`. For Step files of this design see folder coordinate_definitions/step_files.

Surfaces covered in this document are: Origin, Primary, Secondary, Tertiary and Image surface. These surfaces can be fully defined with a location vector and a rotation angle. Another way of defining these is by using a location vector and a rotation matrix, which is useful for Grasp studies.

1 Surface definitions

Table 1 shows the surface definitions for this design. Angle α refers to the rotation around the X coordinate in degrees.

Surface	X[mm]	Y[mm]	Z[mm]	α[deg]
Origin	0	0	0	0
Prime (M1)	0	0	0	1.554018105E+02
Secondary (M2)	0	5.615000000E+03	4.898000000E+03	1.711645903E+02
Tertiary (M3)	0	8.367000000E+03	4.450000000E+02	-1.708825424E+02
Image	0	9.575761967E+03	5.024441463E+03	1.689266466E+02

Table 1: Surface definition coordinates for the TMA.

surface	X[mm]	Y[mm]	Z[mm]	α [deg]
prime	0.000	0.000	0.000	155.402
second	0.000	5615.000	4898.000	171.165
tert	0.000	8367.000	445.000	-170.883
Image	0.000	9575.762	5024.441	168.927

1.00000	0.00000	0.00000
0.00000	-0.90925	-0.41625
0.00000	0.41625	-0.90925

1.00000	0.00000	0.00000
0.00000	-0.98813	-0.15360
0.00000	0.15360	-0.98813

1.00000	0.00000	0.00000
0.00000	-0.98737	0.15846
0.00000	-0.15846	-0.98737

1.00000	0.00000	0.00000
0.00000	-0.98138	-0.19207
0.00000	0.19207	-0.98138