

STARLETTE Retroreflector Array

The coordinate system is described in "Method of calculating retroreflector array transfer functions", page 119, SAO Special Report 382, 1978, Smithsonian Astrophysical Observatory, Cambridge, MA, U.S.A.

The first three columns are indices indicating the location of the cube.

There are 4 caps, each with 5 triangular sections and 3 cubes in each triangle, for a total of 60 cubes. The next three columns are the X, Y, Z coordinates of the center of the front face of the cube in meters. The last three columns are the orientation angles Theta, Phi, and Alpha. Phi is measured from the pole, Theta the equatorial angle, and Alpha is the rotation of the cube about its symmetry axis.

The report "Optical Transfer Function of Starlette Retroreflector Array", David A. Arnold, February, 1975, Technical Report, RTOP 161-05-02, Grant NGR 09-015-002, Supplement No. 57 gives all the details.

The radius of the satellite is 12 cm. The cubes are recessed by .5 +/- .2 mm below the surface. The recession plus the flatness of the face places the center of the front face of the cube at a radius of 11.837 cm from the center of the sphere.

Cap	Section	Cube	X (meters)	Y (meters)	Z (meters)	Theta (radians)	Phi (radians)	Alpha (radians)
1	1	1	.04509	-.00000	.10944	0.00000	.39083	.00000
1	1	2	.08157	-.02651	.08157	5.96903	.81048	2.32979
1	1	3	.08157	.02651	.08157	.31416	.81048	3.95340
1	2	1	.01393	.04289	.10944	1.25664	.39083	.00000
1	2	2	.05042	.06939	.08157	.94248	.81048	2.32979
1	2	3	.00000	.08577	.08157	1.57080	.81048	3.95340
1	3	1	-.03648	.02651	.10944	2.51327	.39083	.00000
1	3	2	-.05042	.06939	.08157	2.19911	.81048	2.32979
1	3	3	-.08157	.02651	.08157	2.82743	.81048	3.95340
1	4	1	-.03648	-.02651	.10944	3.76991	.39083	.00000
1	4	2	-.08157	-.02651	.08157	3.45575	.81048	2.32979
1	4	3	-.05042	-.06939	.08157	4.08407	.81048	3.95340
1	5	1	.01393	-.04289	.10944	5.02655	.39083	.00000
1	5	2	.00000	-.08577	.08157	4.71239	.81048	2.32979
1	5	3	.05042	-.06939	.08157	5.34071	.81048	3.95340
2	1	1	.11806	0.00000	-.00861	0.00000	1.64362	3.14159
2	1	2	.10944	.02651	.03648	.23761	1.25750	5.17659
2	1	3	.10944	-.02651	.03648	6.04558	1.25750	1.10659
2	2	1	.03648	.11228	-.00861	1.25664	1.64362	3.14159
2	2	2	.00861	.11228	.03648	1.49424	1.25750	5.17659
2	2	3	.05903	.09590	.03648	1.01903	1.25750	1.10659
2	3	1	-.09551	.06939	-.00861	2.51327	1.64362	3.14159
2	3	2	-.10412	.04289	.03648	2.75088	1.25750	5.17659
2	3	3	-.07296	.08577	.03648	2.27567	1.25750	1.10659
2	4	1	-.09551	-.06939	-.00861	3.76991	1.64362	3.14159
2	4	2	-.07296	-.08577	.03648	4.00752	1.25750	5.17659
2	4	3	-.10412	-.04289	.03648	3.53231	1.25750	1.10659
2	5	1	.03648	-.11228	-.00861	5.02655	1.64362	3.14159
2	5	2	.05903	-.09590	.03648	5.26415	1.25750	5.17659
2	5	3	.00861	-.11228	.03648	4.78894	1.25750	1.10659

3	1	1	-.11806	0.00000	.00861	3.14159	1.49798	0.00000
3	1	2	-.10944	.02651	-.03648	2.90399	1.88409	8.31819
3	1	3	-.10944	-.02651	-.03648	3.37920	1.88409	4.24818
3	2	1	-.03648	.11228	.00861	1.88496	1.49798	0.00000
3	2	2	-.00861	.11228	-.03648	1.64735	1.88409	8.31819
3	2	3	-.05903	.09590	-.03648	2.12256	1.88409	4.24818
3	3	1	.09551	.06939	.00861	.62832	1.49798	0.00000
3	3	2	.10412	.04289	-.03648	.39071	1.88409	8.31819
3	3	3	.07296	.08577	-.03648	.86592	1.88409	4.24818
3	4	1	.09551	-.06939	.00861	5.65487	1.49798	0.00000
3	4	2	.07296	-.08577	-.03648	5.41726	1.88409	8.31819
3	4	3	.10412	-.04289	-.03648	5.89247	1.88409	4.24818
3	5	1	-.03648	-.11228	.00861	4.39823	1.49798	0.00000
3	5	2	-.05903	-.09590	-.03648	4.16062	1.88409	8.31819
3	5	3	-.00861	-.11228	-.03648	4.63584	1.88409	4.24818
4	1	1	-.04509	-.00000	-.10944	3.14159	2.75077	3.14159
4	1	2	-.08157	-.02651	-.08157	3.45575	2.33111	5.47138
4	1	3	-.08157	.02651	-.08157	2.82743	2.33111	7.09499
4	2	1	-.01393	.04289	-.10944	1.88496	2.75077	3.14159
4	2	2	-.05042	.06939	-.08157	2.19911	2.33111	5.47138
4	2	3	-.00000	.08577	-.08157	1.57080	2.33111	7.09499
4	3	1	.03648	.02651	-.10944	.62832	2.75077	3.14159
4	3	2	.05042	.06939	-.08157	.94248	2.33111	5.47138
4	3	3	.08157	.02651	-.08157	.31416	2.33111	7.09499
4	4	1	.03648	-.02651	-.10944	5.65487	2.75077	3.14159
4	4	2	.08157	-.02651	-.08157	5.96903	2.33111	5.47138
4	4	3	.05042	-.06939	-.08157	5.34071	2.33111	7.09499
4	5	1	-.01393	-.04289	-.10944	4.39823	2.75077	3.14159
4	5	2	-.00000	-.08577	-.08157	4.71239	2.33111	5.47138
4	5	3	-.05042	-.06939	-.08157	4.08407	2.33111	7.09499