

Table 1.: List of coronal null points which appear to have structure as they crossed the east, west or both limbs of the Sun. Complete list of predicted null points can be found at www.solar.physics.montana.edu/mfreesd/Null_point_research/data/

Line #	East Limb Crossing	West Limb Crossing	Structure on Limb	Latitude	Radius	Carrington Rotation	Sign of Null Point	Ratio of Same Eigen-value	Odd Eigen-value	Tilt of Spine in the Plane with Respect to Vector Normal to Surface	Tilt of Spine In/Out of the Plane of the Sky on the West Limb
1	2010-06-25T10:46	2010-07-08T22:35	West	-13.6	1.056	2098	(-)	0.19	7.25	27.42	-49.48
2	2010-07-16T14:54	2010-07-29T12:16	East	-42.8	1.073	2099	(+)	0.20	-2.89	-76.30	-6.41
3	2010-07-25T12:5	2010-08-08T19:58	Both	39.3	1.096	2099	(-)	0.72	5.61	71.90	-10.05
4	2010-08-24T05:48	2010-09-04T06:00	Both	-66.7	1.073	2100	(-)	0.38	3.49	50.02	3.66
5	2010-08-28T11:26	2010-09-11T20:03	East	33.4	1.190	2100	(+)	0.48	-1.42	-13.75	-73.04
6	2010-08-29T10:58	2010-09-12T22:13	Both	37.2	1.286	2100	(-)	0.38	0.93	81.83	-15.66
7	2010-08-29T20:15	2010-09-13T14:15	Both	45.2	1.141	2101	(-)	0.57	2.43	88.51	-1.60
8	2010-09-04T22:24	2010-09-19T22:41	West	51.3	1.059	2101	(-)	0.37	7.37	58.01	-13.36
9	2010-09-10T15:33	2010-09-23T02:09	Both	-47.6	1.060	2101	(-)	0.02	6.28	-10.35	-0.46
10	2010-09-14T21:33	2010-09-27T13:41	West	-41.7	1.077	2101	(+)	0.37	-5.90	-74.79	-33.42
11	2010-09-26T08:26	2010-10-10T22:24	East	43.1	1.138	2102	(-)	0.81	2.60	82.42	1.20
12	2010-10-08T04:7	2010-10-20T16:24	Both	-51.3	1.074	2102	(-)	0.19	4.05	-8.01	32.58
13	2010-10-12T08:26	2010-10-26T18:45	West	42.6	1.245	2102	(-)	0.30	0.67	67.62	27.21
14	2010-10-12T19:41	2010-10-27T04:41	East	40.8	1.080	2102	(+)	0.83	-3.39	-74.00	17.58
15	2010-10-18T09:45	2010-10-31T22:35	East	-8.0	1.083	2102	(-)	0.48	3.45	47.22	-43.45
16	2010-11-14T09:56	2010-11-27T22:58	East	-18.2	1.248	2103	(-)	0.42	0.53	68.66	-18.40
17	2010-12-26T19:30	2011-01-09T20:15	West	-36.5	1.052	2105	(-)	0.66	4.62	16.31	-42.37
18	2011-01-07T01:24	2011-01-19T21:33	East	51.5	1.135	2105	(-)	0.39	1.57	-82.28	14.12
19	2011-01-08T15:0	2011-01-22T08:15	West	-4.1	1.070	2105	(-)	0.26	-1.86	-77.46	1.18
20	2011-02-13T01:24	2011-02-27T05:48	West	-26.0	1.085	2107	(+)	0.38	-1.11	-21.13	21.77
21	2011-02-19T16:1	2011-03-06T07:46	Both	-42.3	1.074	2107	(+)	0.13	-2.62	-68.07	5.66
22	2011-04-01T14:48	2011-04-15T05:37	West	1.4	1.075	2108	(+)	0.09	-4.80	-86.80	-7.89
23	2011-04-03T01:18	2011-04-16T15:56	West	1.8	1.089	2108	(+)	0.48	-3.62	-6.32	-81.59
24	2011-04-20T19:24	2011-05-04T06:22	Both	13.6	1.095	2109	(+)	0.51	-5.88	-3.32	-86.73
25	2011-04-30T17:9	2011-05-14T08:20	Both	-2.4	1.074	2109	(+)	0.26	-3.11	-5.45	-66.05
26	2011-05-06T22:35	2011-05-20T15:11	West	-10.3	1.143	2110	(+)	0.56	-1.34	62.89	-43.23
27	2011-05-16T04:13	2011-05-29T18:16	Both	3.3	1.037	2110	(+)	0.26	-7.37	-31.09	-57.55
28	2011-05-20T08:9	2011-06-03T00:22	Both	-20.4	1.106	2110	(-)	0.26	4.36	25.55	-68.28
29	2011-05-21T08:9	2011-06-03T23:37	Both	-13.1	1.176	2110	(+)	0.59	-2.93	-8.55	57.97
30	2011-06-01T12:39	2011-06-15T02:48	East	-32.2	1.093	2111	(+)	0.54	-2.66	-69.67	-1.29
31	2011-06-06T07:13	2011-06-19T20:54	East	-13.6	1.142	2111	(+)	0.54	-2.40	38.91	63.52
32	2011-06-23T12:11	2011-07-07T06:39	Both	22.8	1.103	2111	(+)	0.16	-9.19	-8.08	43.18
33	2011-07-02T17:48	2011-07-16T12:39	East	17.7	1.052	2112	(-)	0.35	2.14	36.46	54.97
34	2011-07-08T06:28	2011-07-22T15:11	West	49.3	1.225	2112	(-)	0.52	1.16	-87.86	10.40
35	2011-07-22T04:18	2011-08-05T01:24	East	18.0	1.064	2112	(-)	0.13	20.47	-2.95	87.95
36	2011-09-09T23:43	2011-09-25T00:00	East	51.5	1.144	2114	(-)	0.87	2.41	89.95	-0.28
37	2011-09-11T18:56	2011-09-25T08:09	East	-4.5	1.102	2114	(-)	0.62	6.30	54.69	-33.34

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Table 1.: Continues

Line #	East Limb Crossing	West Limb Crossing	Structure on Limb	Latitude	Radius	Carrington Rotation	Sign of Null Point	Ratio of Same Eigen-value	Odd Eigen-value	Tilt of Spine in the Plane with Respect to Vector Normal to Surface	Tilt of Spine In/Out of the Plane of the Sky on the West Limb
38	2011-09-17T04:1	2011-10-02T05:03	West	52.7	1.094	2115	(-)	0.25	3.36	84.02	7.50
39	2011-09-30T01:24	2011-10-14T15:28	East	43.8	1.082	2115	(-)	0.43	3.91	-85.82	-2.60
40	2011-10-07T08:26	2011-10-22T06:16	West	54.3	1.159	2115	(-)	0.74	2.34	-80.48	8.32
41	2011-10-10T17:9	2011-10-23T14:03	East	-41.5	1.244	2115	(+)	0.89	-1.53	-65.51	-3.88
42	2011-10-15T04:1	2011-10-29T21:16	East	52.8	1.073	2116	(-)	0.08	4.16	76.13	1.47
43	2011-10-21T18:28	2011-11-04T18:39	Both	26.6	1.162	2116	(+)	0.42	-5.61	63.13	-44.49
44	2011-10-22T10:7	2011-11-05T12:33	Both	32.3	1.094	2116	(-)	0.51	6.66	27.31	40.60
45	2011-10-22T21:56	2011-11-05T06:33	West	-22.3	1.157	2116	(+)	0.39	-1.37	-79.07	-26.26
46	2011-10-23T10:52	2011-11-05T18:28	West	-25.1	1.185	2116	(-)	0.52	1.22	15.40	-13.44
47	2011-10-23T18:22	2011-11-06T22:30	West	37.1	1.060	2116	(+)	0.62	-8.73	-20.59	-76.05
48	2011-11-07T16:1	2011-11-20T21:28	East	-42.9	1.194	2116	(+)	0.79	-1.94	-69.49	1.27
49	2011-12-13T09:45	2011-12-27T06:39	West	-42.3	1.087	2118	(+)	0.28	-5.30	-65.69	15.29
50	2011-12-14T08:9	2011-12-28T01:13	West	-9.7	1.106	2118	(-)	0.49	5.35	-56.92	42.13
51	2011-12-15T10:13	2011-12-28T23:54	West	19.1	1.194	2118	(+)	0.11	-3.25	72.09	-6.39
52	2011-12-15T12:5	2011-12-29T01:30	West	20.1	1.134	2118	(-)	0.10	7.17	-2.04	88.47
53	2011-12-27T02:15	2012-01-09T19:07	East	-4.2	1.162	2118	(-)	0.24	5.32	41.56	55.10
54	2012-01-07T05:37	2012-01-20T01:01	Both	52.3	1.111	2119	(-)	0.45	3.40	-80.04	2.85
55	2012-01-08T04:24	2012-01-21T00:45	Both	50.5	1.064	2119	(+)	0.22	-5.50	8.93	70.65
56	2012-01-12T11:20	2012-01-26T10:58	West	-22.2	1.259	2119	(+)	0.13	-1.48	17.41	4.32
57	2012-01-29T12:0	2012-02-11T16:24	West	27.2	1.127	2119	(+)	0.81	-6.17	-41.06	61.52
58	2012-02-04T12:50	2012-02-18T03:39	Both	3.1	1.079	2120	(-)	0.65	3.69	15.24	-76.58
59	2012-02-09T01:18	2012-02-23T07:46	Both	-29.8	1.057	2120	(+)	0.27	-6.63	-12.77	54.01
60	2012-02-13T07:18	2012-02-26T15:50	East	16.4	1.133	2120	(+)	0.09	-2.37	45.88	51.63
61	2012-02-16T12:56	2012-03-01T07:18	East	-5.0	1.090	2120	(+)	0.29	-6.89	-50.05	-52.49
62	2012-02-19T08:43	2012-03-04T03:05	West	-5.4	1.080	2120	(-)	0.31	8.49	56.15	47.48
63	2012-02-22T10:1	2012-03-07T03:56	West	-4.3	1.099	2120	(+)	0.20	-5.28	-17.64	2.92
64	2012-03-01T16:52	2012-03-14T20:31	West	24.6	1.101	2121	(-)	0.19	14.37	1.20	88.94
65	2012-03-05T20:54	2012-03-19T05:03	East	16.4	1.191	2121	(-)	0.75	2.43	6.58	-85.24
66	2012-03-28T23:37	2012-04-11T23:54	West	-21.3	1.157	2122	(+)	0.10	-3.04	-35.44	-56.52
67	2012-04-09T11:20	2012-04-24T00:33	Both	-48.2	1.211	2122	(+)	0.51	-1.64	-80.36	7.65
68	2012-04-16T17:15	2012-04-30T08:48	Both	-2.3	1.066	2122	(+)	0.85	-7.55	-26.48	27.19
69	2012-04-18T22:24	2012-05-03T02:48	Both	-38.2	1.115	2122	(+)	0.90	-4.11	-66.45	-1.68
70	2012-04-24T18:45	2012-05-08T00:28	Both	31.6	1.049	2123	(+)	0.16	-7.60	81.83	-23.75
71	2012-04-27T17:31	2012-05-11T04:41	East	14.7	1.182	2123	(-)	0.16	1.98	-10.38	81.52
72	2012-05-02T04:1	2012-05-16T01:13	East	-28.1	1.218	2123	(+)	0.52	-2.05	-20.26	42.99
73	2012-05-03T08:54	2012-05-16T19:52	Both	17.5	1.090	2123	(-)	0.12	8.12	39.10	-59.40
74	2012-05-06T23:15	2012-05-21T02:03	Both	-50.6	1.220	2123	(+)	0.65	-2.13	-84.21	2.17
75	2012-05-11T08:3	2012-05-24T22:13	Both	4.1	1.068	2123	(-)	0.30	13.30	-8.50	83.31
76	2012-05-13T19:30	2012-05-27T09:22	East	5.9	1.210	2123	(+)	0.78	-4.48	-3.15	71.90
77	2012-05-18T11:43	2012-06-01T02:48	East	-7.3	1.270	2123	(+)	0.62	-0.67	-46.91	58.06

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Table 1.: Continues

Line #	East Limb Crossing	West Limb Crossing	Structure on Limb	Latitude	Radius	Carrington Rotation	Sign of Null Point	Ratio of Same Eigen-value	Odd Eigen-value	Tilt of Spine in the Plane with Respect to Vector Normal to Surface	Tilt of Spine In/Out of the Plane of the Sky on the West Limb
78	2012-05-28T18:5	2012-06-11T09:00	West	-31.7	1.141	2124	(+)	0.56	-4.25	-48.18	19.14
79	2012-06-13T07:30	2012-06-26T21:50	West	-1.6	1.094	2124	(-)	0.38	3.00	-14.07	-69.51
80	2012-06-14T19:7	2012-06-28T03:39	Both	-40.9	1.055	2124	(-)	0.38	5.25	-0.36	-89.04
81	2012-06-19T06:0	2012-07-02T18:56	West	-10.5	1.083	2125	(+)	0.46	-7.85	-11.35	-81.31
82	2012-06-19T11:48	2012-07-03T03:45	West	10.3	1.213	2125	(-)	0.35	1.28	-2.89	85.22
83	2012-06-20T20:48	2012-07-04T05:54	East	-30.0	1.122	2125	(-)	0.58	6.61	38.98	60.59
84	2012-06-26T22:46	2012-07-10T12:11	East	-5.6	1.188	2125	(-)	0.51	6.62	71.50	-27.47
85	2012-06-26T23:54	2012-07-11T15:56	East	65.2	1.183	2125	(-)	0.50	0.75	-72.04	-8.19
86	2012-06-28T00:39	2012-07-12T12:22	East	60.4	1.090	2125	(+)	0.26	-2.15	-11.95	66.15
87	2012-07-06T01:35	2012-07-19T23:43	East	27.1	1.073	2125	(+)	0.62	-9.78	72.21	-8.28
88	2012-07-19T08:43	2012-08-01T11:20	East	-31.5	1.132	2126	(-)	0.23	4.65	43.37	52.94
89	2012-08-01T14:26	2012-08-12T23:15	Both	-66.9	1.125	2126	(-)	0.69	3.20	24.71	6.49
90	2012-08-19T04:1	2012-08-31T15:11	Both	-46.8	1.221	2127	(+)	0.16	-1.76	-84.80	-2.36
91	2012-08-22T11:54	2012-09-06T05:15	Both	44.9	1.080	2127	(+)	0.75	-5.80	-83.54	3.07
92	2012-08-29T22:18	2012-09-12T15:50	West	5.2	1.090	2127	(-)	0.64	5.92	-1.06	88.85
93	2012-08-30T16:41	2012-09-10T13:46	Both	-67.4	1.182	2127	(-)	0.14	3.25	20.54	13.06
94	2012-08-31T01:58	2012-09-11T12:22	Both	-63.1	1.112	2127	(+)	0.10	-5.46	73.68	-28.89
95	2012-09-02T04:18	2012-09-15T08:54	Both	-21.6	1.053	2127	(-)	0.79	16.99	-51.86	-42.88
96	2012-09-02T20:54	2012-09-15T23:26	Both	-25.7	1.054	2127	(+)	0.33	-14.35	5.08	78.17
97	2012-09-16T01:58	2012-09-28T11:15	East	-49.1	1.260	2128	(+)	0.43	-1.26	87.54	-0.17
98	2012-09-20T22:1	2012-10-04T12:39	West	-1.7	1.062	2128	(-)	0.59	9.44	-54.78	-38.07
99	2012-09-27T19:41	2012-10-11T21:05	West	22.6	1.075	2128	(+)	0.63	-2.86	42.15	-25.09
100	2012-10-09T04:52	2012-10-24T22:01	Both	67.2	1.307	2129	(-)	0.75	0.33	-51.38	-5.64
101	2012-11-06T13:41	2012-11-20T04:01	West	-6.7	1.066	2130	(-)	0.26	12.65	81.22	16.41
102	2012-11-11T00:5	2012-11-23T22:30	Both	-62.1	1.086	2130	(-)	0.45	3.57	43.15	40.56
103	2012-11-17T16:7	2012-12-01T11:43	West	32.3	1.142	2130	(-)	0.16	1.38	4.72	80.55
104	2012-12-03T22:30	2012-12-17T13:41	East	27.6	1.081	2131	(+)	0.34	-9.09	29.31	11.04
105	2012-12-04T08:54	2012-12-18T02:26	East	-43.7	1.055	2131	(+)	0.58	-4.98	53.32	-51.62
106	2012-12-11T06:28	2012-12-24T22:52	West	-6.6	1.074	2131	(-)	0.66	5.57	-76.39	14.85
107	2012-12-12T03:50	2012-12-25T13:52	Both	48.7	1.197	2131	(+)	0.19	-0.94	89.63	-2.83
108	2012-12-17T01:1	2012-12-30T20:20	East	-24.6	1.213	2131	(+)	0.70	-2.12	5.33	41.47
109	2012-12-22T15:56	2013-01-05T14:31	West	-33.9	1.113	2132	(-)	0.67	4.96	-59.76	-38.36
110	2012-12-27T03:16	2013-01-09T17:31	East	8.3	1.154	2132	(+)	0.21	-4.08	11.43	-72.33
111	2013-01-03T07:7	2013-01-17T19:52	Both	-54.1	1.088	2132	(+)	0.19	-4.53	88.27	-2.53
112	2013-01-19T05:31	2013-02-02T11:26	East	-33.9	1.056	2133	(-)	0.63	7.70	-58.88	-26.97
113	2013-01-21T00:5	2013-02-04T05:37	East	-32.8	1.054	2133	(+)	0.37	-5.72	65.56	6.34
114	2013-01-28T14:31	2013-02-11T18:39	Both	-27.8	1.130	2133	(-)	0.45	6.59	7.40	-63.44
115	2013-01-31T06:28	2013-02-15T12:00	Both	-57.7	1.079	2133	(+)	0.14	-4.65	77.94	1.70
116	2013-02-01T06:45	2013-02-16T12:39	Both	-57.6	1.086	2133	(-)	0.09	4.19	-11.70	12.43
117	2013-02-04T02:43	2013-02-18T05:03	Both	-23.0	1.143	2133	(+)	0.41	-3.65	67.75	35.81

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Table 1.: Continues

Line #	East Limb Crossing	West Limb Crossing	Structure on Limb	Latitude	Radius	Carrington Rotation	Sign of Null Point	Ratio of Same Eigen-value	Odd Eigen-value	Tilt of Spine in the Plane with Respect to Vector Normal to Surface	Tilt of Spine In/Out of the Plane of the Sky on the West Limb
118	2013-02-14T13:7	2013-02-27T16:18	Both	26.3	1.183	2133	(-)	0.22	1.53	-36.61	60.98
119	2013-02-18T17:48	2013-03-05T08:09	Both	-40.4	1.088	2134	(+)	0.15	-5.28	-6.64	21.72
120	2013-02-21T21:33	2013-03-08T06:37	West	-31.5	1.062	2134	(+)	0.23	-6.99	-8.61	78.38
121	2013-03-07T06:28	2013-03-16T20:26	East	74.0	1.196	2134	(-)	0.97	1.59	5.74	-41.15
122	2013-03-18T14:20	2013-04-01T19:24	Both	-28.3	1.075	2135	(+)	0.29	-6.95	7.63	-52.64
123	2013-04-11T04:13	2013-04-25T04:13	West	-24.2	1.116	2136	(+)	0.55	-4.79	-4.83	86.11
124	2013-04-16T02:9	2013-04-29T21:22	East	-12.5	1.171	2136	(+)	0.63	-2.27	8.88	-37.34
125	2013-05-04T06:28	2013-05-16T21:11	Both	64.6	1.145	2136	(-)	0.58	1.52	-28.13	20.64
126	2013-05-17T20:31	2013-05-31T09:16	East	18.2	1.066	2137	(+)	0.09	-8.25	-6.63	-57.47
127	2013-05-19T02:43	2013-06-01T21:11	West	-38.3	1.081	2137	(-)	0.83	6.65	68.50	26.60
128	2013-05-25T14:43	2013-06-08T08:26	West	-55.9	1.119	2137	(-)	0.40	2.68	-87.49	-1.06
129	2013-06-02T07:18	2013-06-15T19:35	East	-62.5	1.088	2137	(+)	0.13	-1.62	60.31	-23.28
130	2013-06-06T05:54	2013-06-19T14:03	East	-65.8	1.220	2138	(+)	0.32	-1.02	41.40	-13.08
131	2013-06-23T08:48	2013-07-07T00:22	East	7.0	1.082	2138	(+)	0.34	-6.00	31.83	-3.03
132	2013-06-26T14:26	2013-07-10T05:09	Both	1.3	1.205	2138	(-)	0.35	1.33	-14.44	-56.66
133	2013-07-04T15:50	2013-07-17T19:18	Both	-37.2	1.081	2139	(+)	0.36	-4.35	-27.06	-12.52
134	2013-07-04T22:41	2013-07-18T05:54	West	-26.8	1.068	2139	(-)	0.21	5.61	36.87	-63.44
135	2013-07-23T22:41	2013-08-04T11:37	East	-67.4	1.054	2139	(+)	0.26	-5.42	28.72	15.29