

Table 34. Earth-Jupiter-Sun, 1975 (launch HEV = 11.5 km/sec)

Launch Date (1975)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	\bar{E}, \hat{T} (km)	\bar{E}, \hat{R} (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	T_{23} (days)	VAP (km/sec)	TFT (yr)
6/15	458.0	146.58	1.81	-870068.	-7357.	15.352	74.10	356223.	75.32	1.665	647.81	617.43	3.027
6/17	450.0	144.13	1.72	-734772.	-5483.	15.669	72.46	262518.	82.25	3.217	590.70	617.43	2.849
6/19	444.0	141.87	1.64	-668018.	-4733.	15.899	71.35	219629.	85.85	4.022	564.60	617.44	2.761
6/21	438.0	139.60	1.57	-612631.	-4202.	16.132	70.25	185687.	88.95	4.726	543.45	617.44	2.687
6/23	434.0	137.51	1.51	-584495.	-3973.	16.270	69.63	169001.	90.58	5.098	532.86	617.44	2.647
6/25	430.0	135.42	1.46	-558681.	-3784.	16.407	69.02	154037.	92.11	5.452	523.15	617.45	2.609
6/27	428.0	133.52	1.41	-552726.	-3766.	16.441	68.88	150621.	92.47	5.534	520.94	617.45	2.598
6/29	426.0	131.61	1.37	-547137.	-3751.	16.472	68.74	147441.	92.81	5.614	518.85	617.45	2.586
7/1	426.0	129.88	1.33	-560233.	-3871.	16.399	69.07	154911.	92.02	5.430	523.81	617.45	2.600
7/3	428.0	128.34	1.29	-594379.	-4118.	16.222	69.87	174785.	90.02	4.964	536.73	617.44	2.641
7/5	430.0	126.79	1.26	-632611.	-4365.	16.044	70.69	197719.	87.83	4.466	551.22	617.44	2.686
7/7	436.0	125.60	1.23	-733627.	-4931.	15.674	72.48	261682.	82.33	3.229	590.51	617.43	2.810
7/9	444.0	124.60	1.20	-977926.	-6051.	15.222	74.87	437783.	69.99	0.451	700.38	617.42	3.133

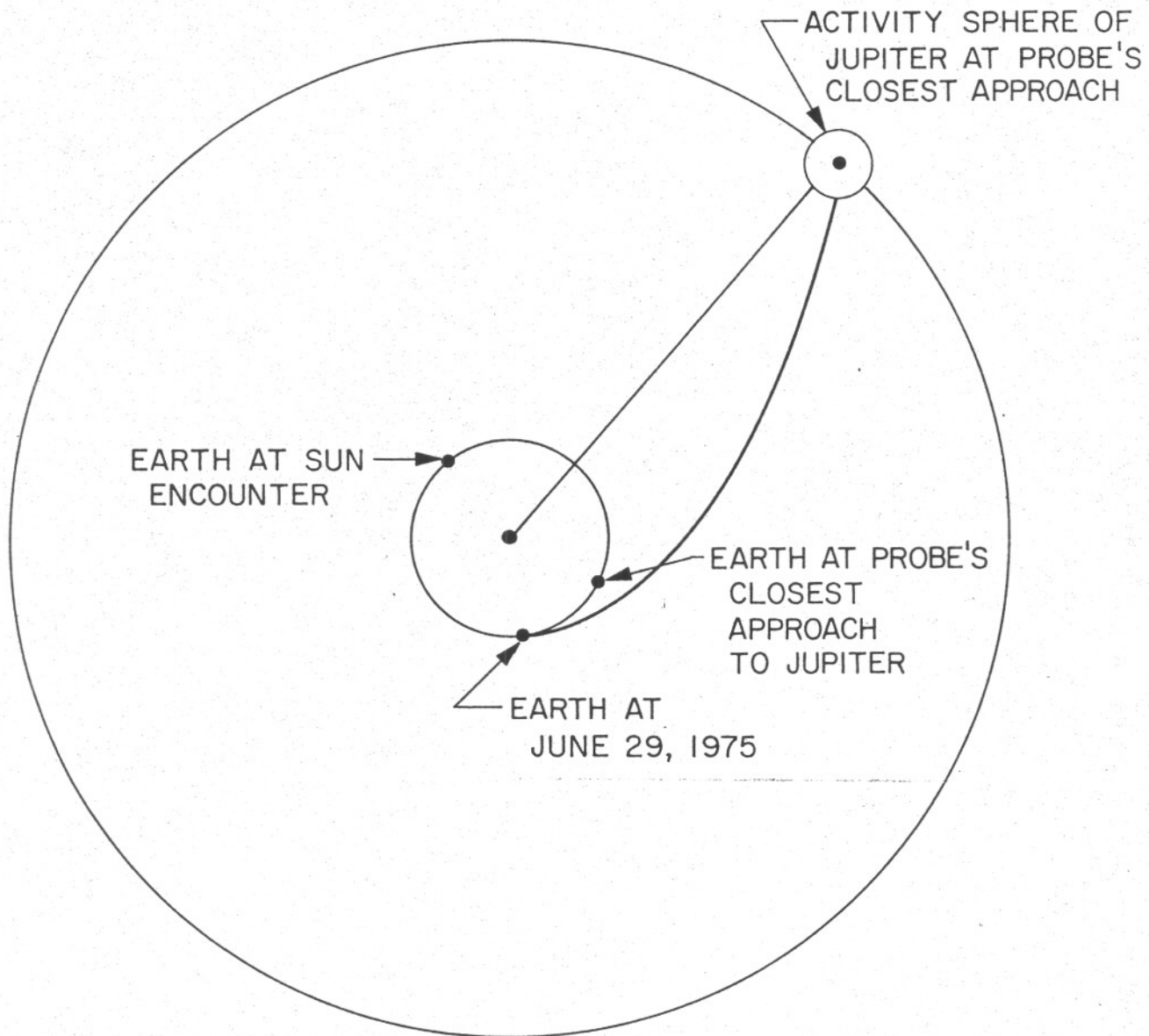


Fig. 44. Planetary configuration for Earth-Jupiter-Sun, 1975 (June 29 trajectory)

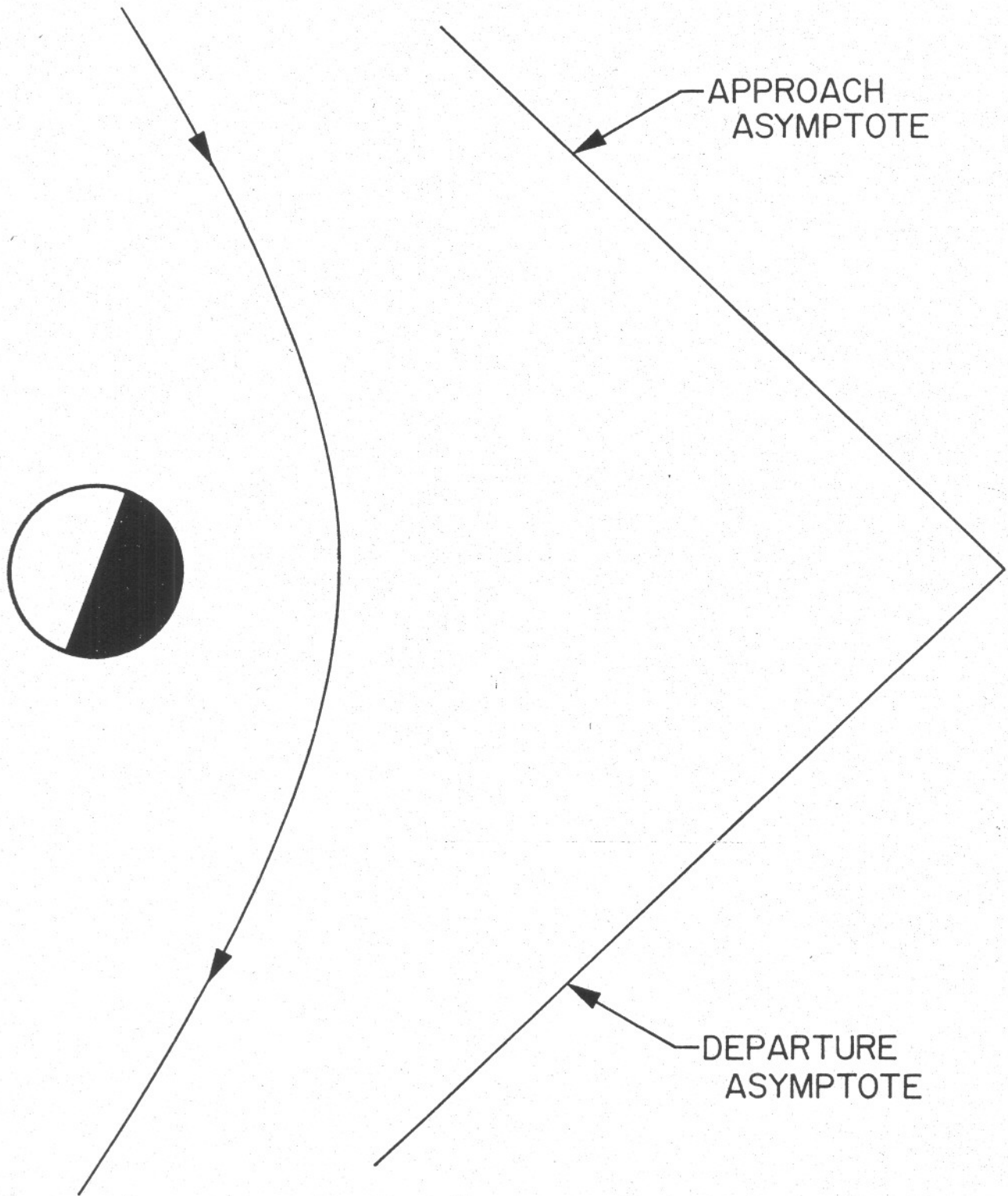


Fig. 45. June 29, 1975, Earth-Jupiter-Sun trajectory during its closest approach to Jupiter

Table 35. Earth-Jupiter-Sun, 1976 (launch HEV = 11.5 km/sec)

Launch Date (1976)	T ₁₂ (days)	θ ₁₂ (deg)	φ ₁₂ (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V ₁ (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V ₂ (km/sec)	T ₂₃ (days)	VAP (km/sec)	TFT (yr)
7/21	472.0	148.15	0.57	-907198.	-14725.	15.200	77.62	373223.	75.58	1.445	680.01	617.43	3.154
7/23	464.0	145.73	0.55	-771384.	-13296.	15.504	75.94	279372.	82.21	2.891	622.48	617.44	2.975
7/25	458.0	143.47	0.53	-703247.	-12493.	15.724	74.80	235570.	85.69	3.653	595.64	617.44	2.885
7/27	452.0	141.22	0.52	-646571.	-11797.	15.947	73.67	200773.	88.71	4.319	573.84	617.45	2.809
7/29	448.0	139.13	0.50	-617641.	-11430.	16.078	73.04	183567.	90.30	4.673	562.86	617.45	2.768
7/31	444.0	137.05	0.49	-591049.	-11086.	16.208	72.41	168101.	91.79	5.009	552.77	617.45	2.729
8/2	442.0	135.14	0.47	-584845.	-11016.	16.241	72.26	164529.	92.15	5.089	550.46	617.45	2.717
8/4	440.0	133.22	0.46	-579042.	-10949.	16.271	72.12	161214.	92.48	5.165	548.26	617.45	2.706
8/6	440.0	131.48	0.44	-592423.	-11139.	16.200	72.46	168872.	91.72	4.993	553.36	617.45	2.719
8/8	442.0	129.91	0.42	-627258.	-11584.	16.031	73.28	189202.	89.78	4.556	566.61	617.45	2.761
8/10	446.0	128.50	0.40	-690575.	-12329.	15.767	74.59	227586.	86.38	3.802	590.89	617.44	2.839
8/12	452.0	127.27	0.37	-801913.	-13426.	15.416	76.44	299563.	80.72	2.565	635.03	617.44	2.976

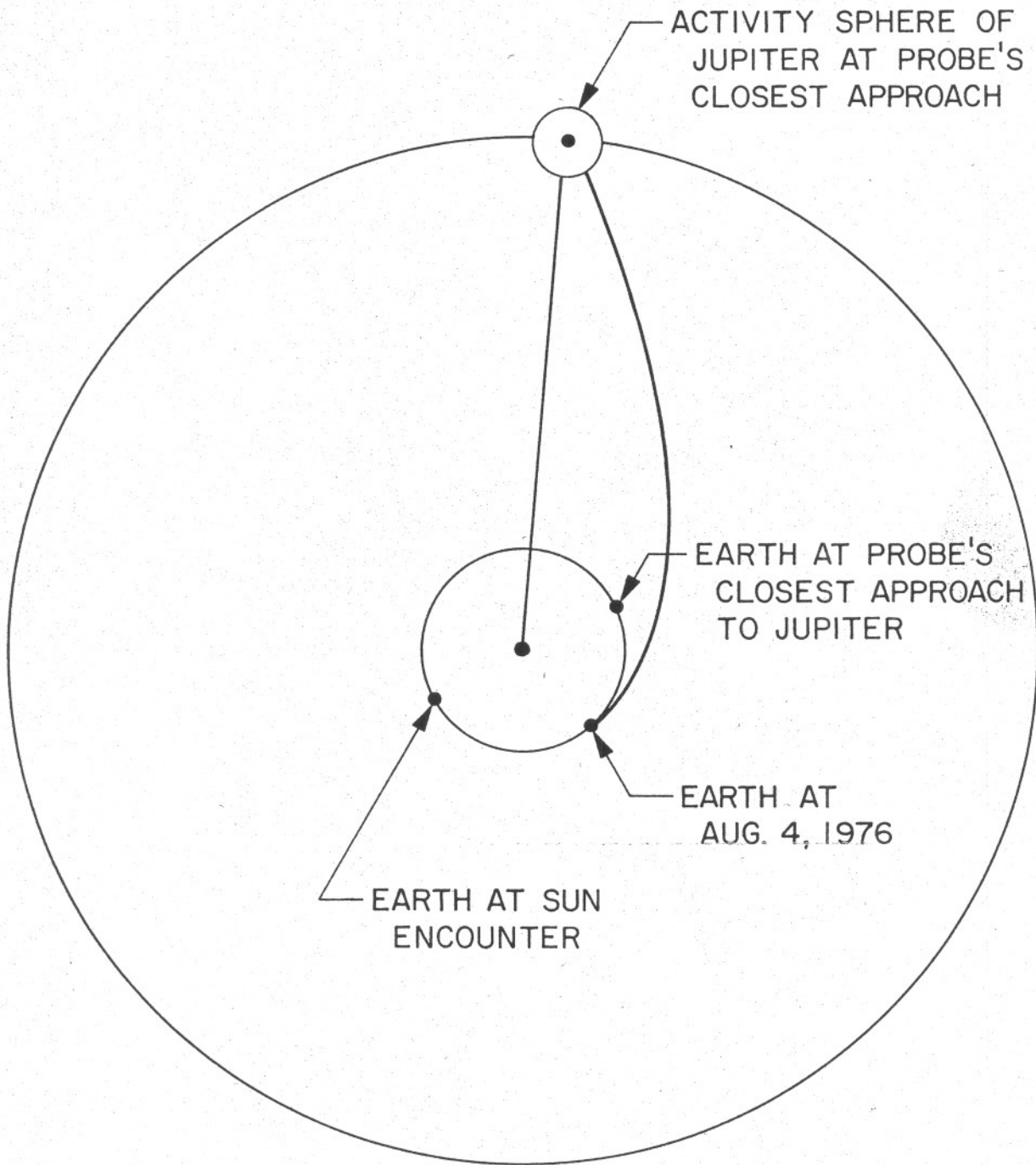


Fig. 46. Planetary configuration for Earth-Jupiter-Sun,
1976 (Aug. 4 trajectory)

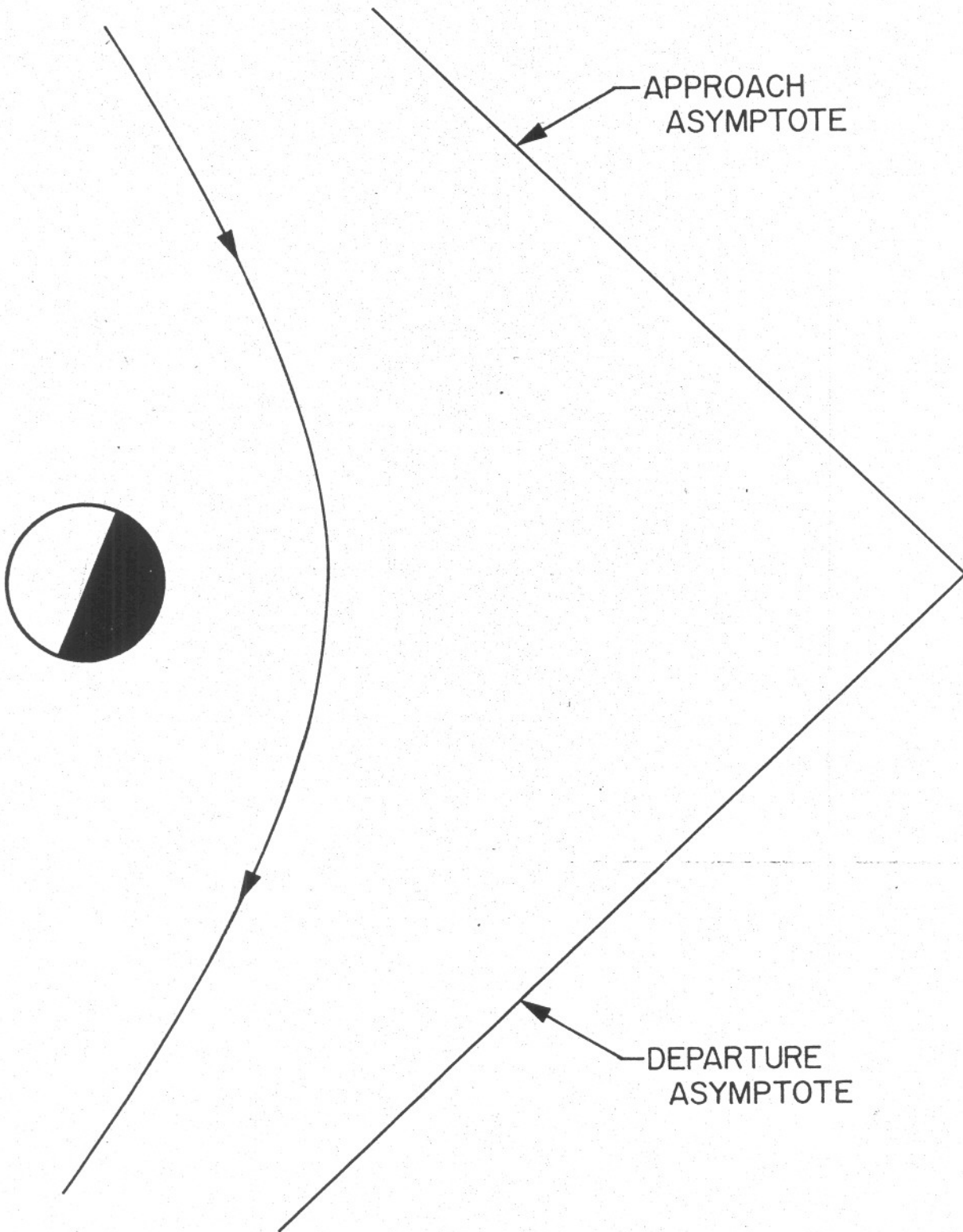


Fig. 47. August 4, 1976, Earth-Jupiter-Sun trajectory during its closest approach to Jupiter

Table 36. Earth-Jupiter-Sun, 1977 (launch HEV = 11.5 km/sec)

Launch Date (1977)	T ₁₂ (days)	θ ₁₂ (deg)	φ ₁₂ (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V ₁ (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V ₂ (km/sec)	T ₂₃ (days)	VAP (km/sec)	TFT (yr)
8/23	498.0	152.07	1.05	-1019777.	-16297.	14.668	82.61	443147.	72.92	0.866	736.55	617.44	3.380
8/25	488.0	149.49	0.94	-821756.	-16337.	15.033	80.40	303506.	81.93	2.777	652.92	617.44	3.124
8/27	480.0	147.07	0.86	-726237.	-15707.	15.326	78.76	242431.	86.54	3.757	616.46	617.45	3.002
8/29	474.0	144.82	0.80	-671291.	-15158.	15.538	77.62	209073.	89.33	4.354	596.03	617.45	2.929
8/31	468.0	142.56	0.74	-623260.	-14565.	15.752	76.50	180988.	91.85	4.904	578.27	617.46	2.864
9/2	462.0	140.30	0.70	-580590.	-13955.	15.970	75.40	156889.	94.17	5.420	562.45	617.46	2.805
9/4	458.0	138.20	0.66	-558164.	-13598.	16.096	74.78	144539.	95.43	5.703	554.13	617.46	2.771
9/6	456.0	136.26	0.64	-552915.	-13500.	16.127	74.63	141670.	95.73	5.771	552.20	617.46	2.760
9/8	454.0	134.32	0.62	-548008.	-13406.	16.155	74.49	139010.	96.01	5.836	550.36	617.47	2.750
9/10	454.0	132.54	0.61	-559491.	-13577.	16.086	74.83	145246.	95.36	5.689	554.65	617.46	2.761
9/12	458.0	131.08	0.61	-607035.	-14295.	15.828	76.12	171689.	92.73	5.100	572.34	617.46	2.821
9/14	462.0	129.62	0.61	-661454.	-15053.	15.573	77.44	203183.	89.85	4.470	592.44	617.45	2.887
9/16	470.0	128.48	0.62	-778766.	-16438.	15.146	79.76	275417.	84.00	3.219	636.39	617.45	3.029
9/18	482.0	127.66	0.64	-1147760.	-18189.	14.571	83.29	543529.	67.29	0.354	801.48	617.44	3.514

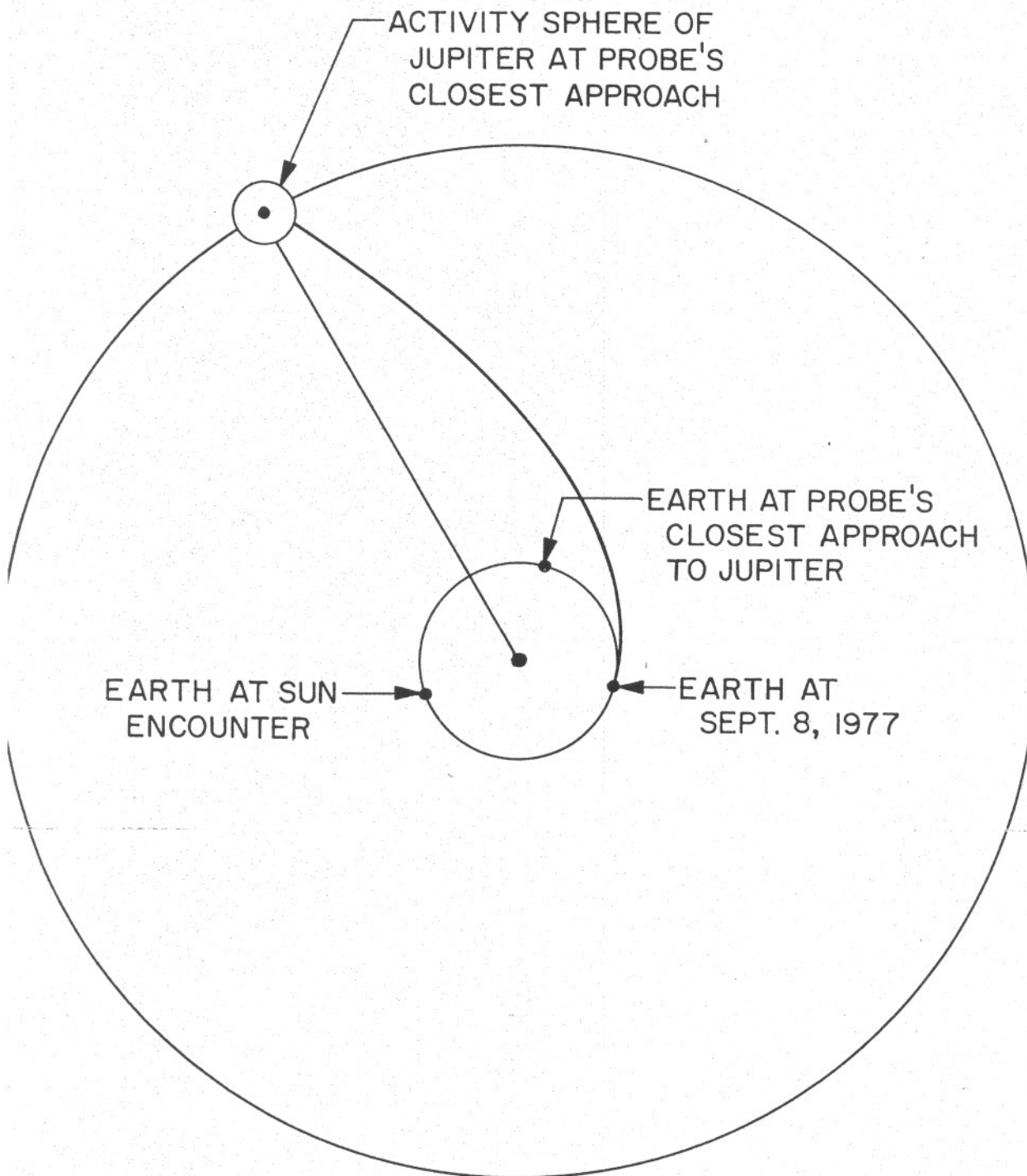


Fig. 48. Planetary configuration for Earth-Jupiter-Sun, 1977 (Sept. 8 trajectory)

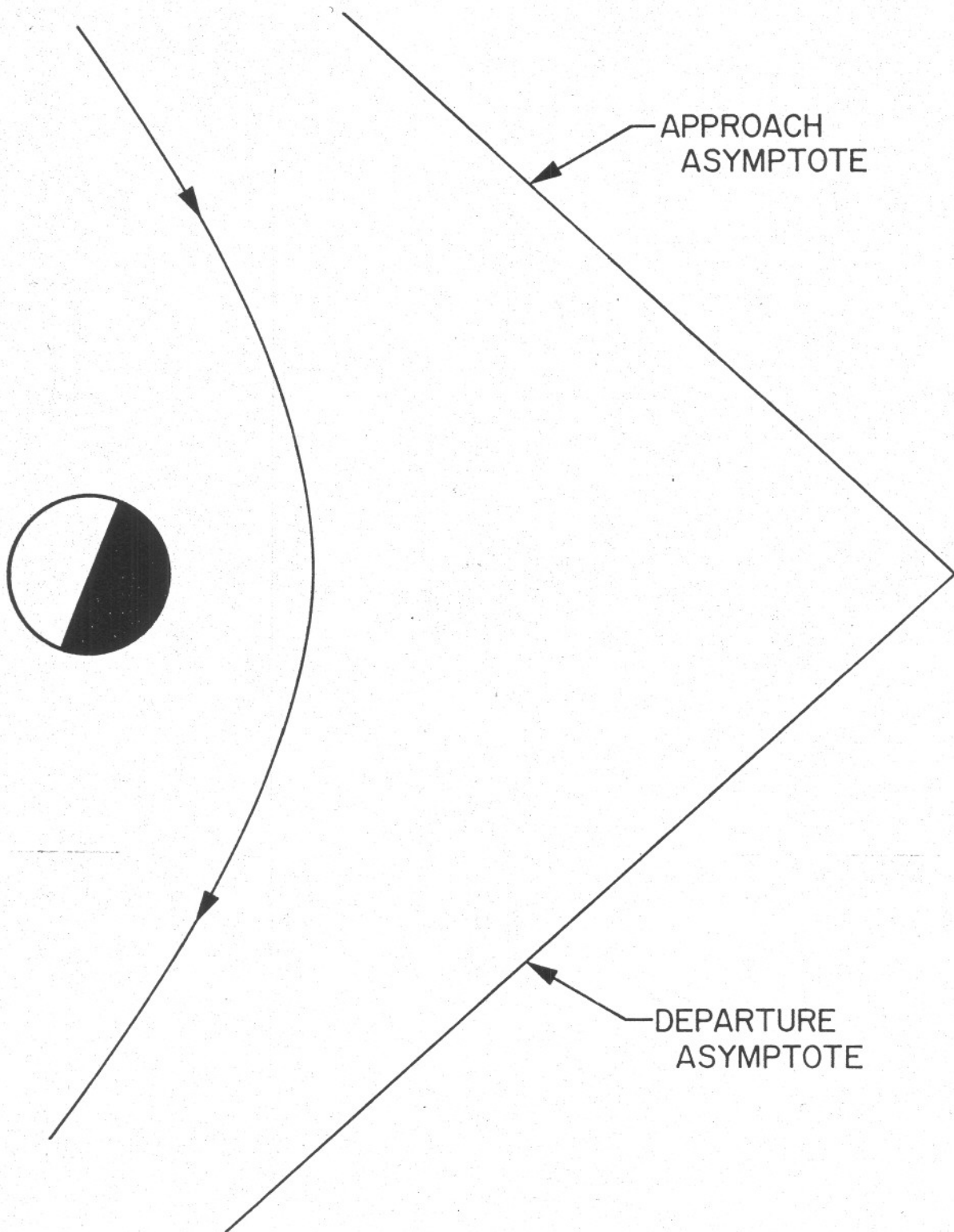


Fig. 49. September 8, 1977, Earth-Jupiter-Sun trajectory during its closest approach to Jupiter

Table 37. Earth-Jupiter-Sun, 1978 (launch HEV = 11.5 km/sec)

Launch Date (1978)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	T_{23} (days)	VAP (km/sec)	TFT (yr)
9/25	512.0	152.77	2.33	-862697.	-13206.	14.482	84.11	322963.	81.75	2.923	668.96	617.45	3.233
9/27	502.0	150.20	2.12	-741871.	-13506.	14.839	82.00	246105.	87.34	4.082	625.20	617.46	3.086
9/29	492.0	147.61	1.96	-649281.	-13080.	15.208	79.93	191277.	91.92	5.051	592.44	617.46	2.969
10/1	486.0	145.34	1.83	-606471.	-12692.	15.416	78.83	167099.	94.15	5.533	577.34	617.47	2.911
10/3	480.0	143.06	1.73	-567813.	-12241.	15.626	77.74	145940.	96.25	5.992	563.58	617.47	2.857
10/5	474.0	140.79	1.64	-532627.	-11757.	15.839	76.67	127244.	98.22	6.434	550.89	617.48	2.806
10/7	470.0	138.66	1.56	-513924.	-11446.	15.962	76.06	117518.	99.29	6.679	544.09	617.48	2.776
10/9	468.0	136.68	1.51	-509630.	-11322.	15.991	75.92	115300.	99.55	6.737	542.53	617.48	2.767
10/11	466.0	134.71	1.45	-505622.	-11204.	16.017	75.79	113247.	99.78	6.792	541.04	617.48	2.757
10/13	468.0	133.04	1.42	-529622.	-11480.	15.856	76.58	125651.	98.39	6.475	549.82	617.48	2.787
10/15	470.0	131.37	1.39	-555506.	-11777.	15.693	77.39	139323.	96.93	6.148	559.15	617.47	2.818
10/17	476.0	130.00	1.37	-617682.	-12509.	15.352	79.15	173324.	93.57	5.410	581.29	617.47	2.895
10/19	486.0	128.95	1.37	-736031.	-13717.	14.851	81.91	242486.	87.64	4.149	623.07	617.46	3.036
10/21	500.0	128.20	1.37	-992019.	-15178.	14.213	85.78	411913.	76.11	1.771	718.74	617.45	3.337

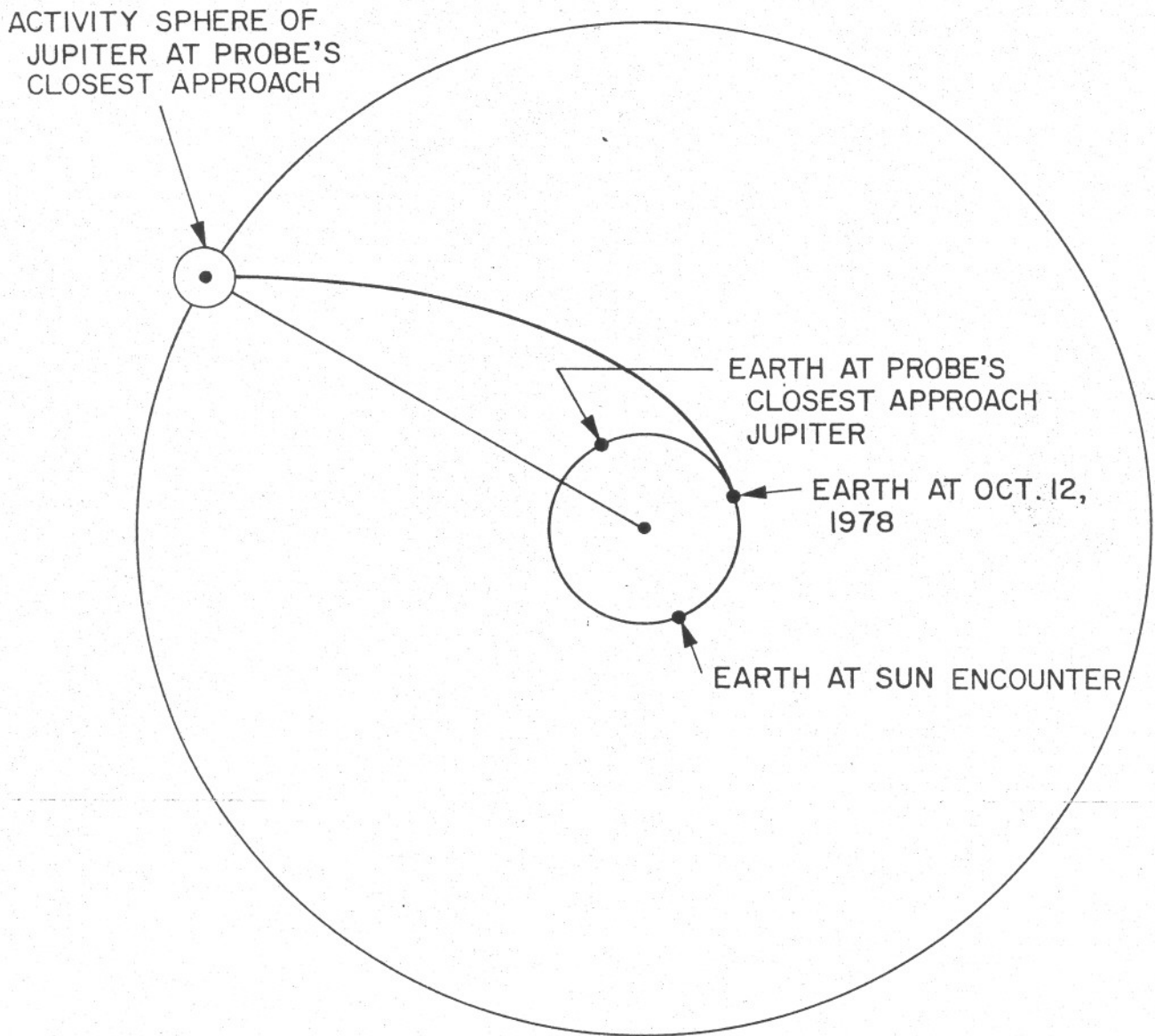


Fig. 50. Planetary configuration for Earth-Jupiter-Sun,
1978 (October 11 trajectory)

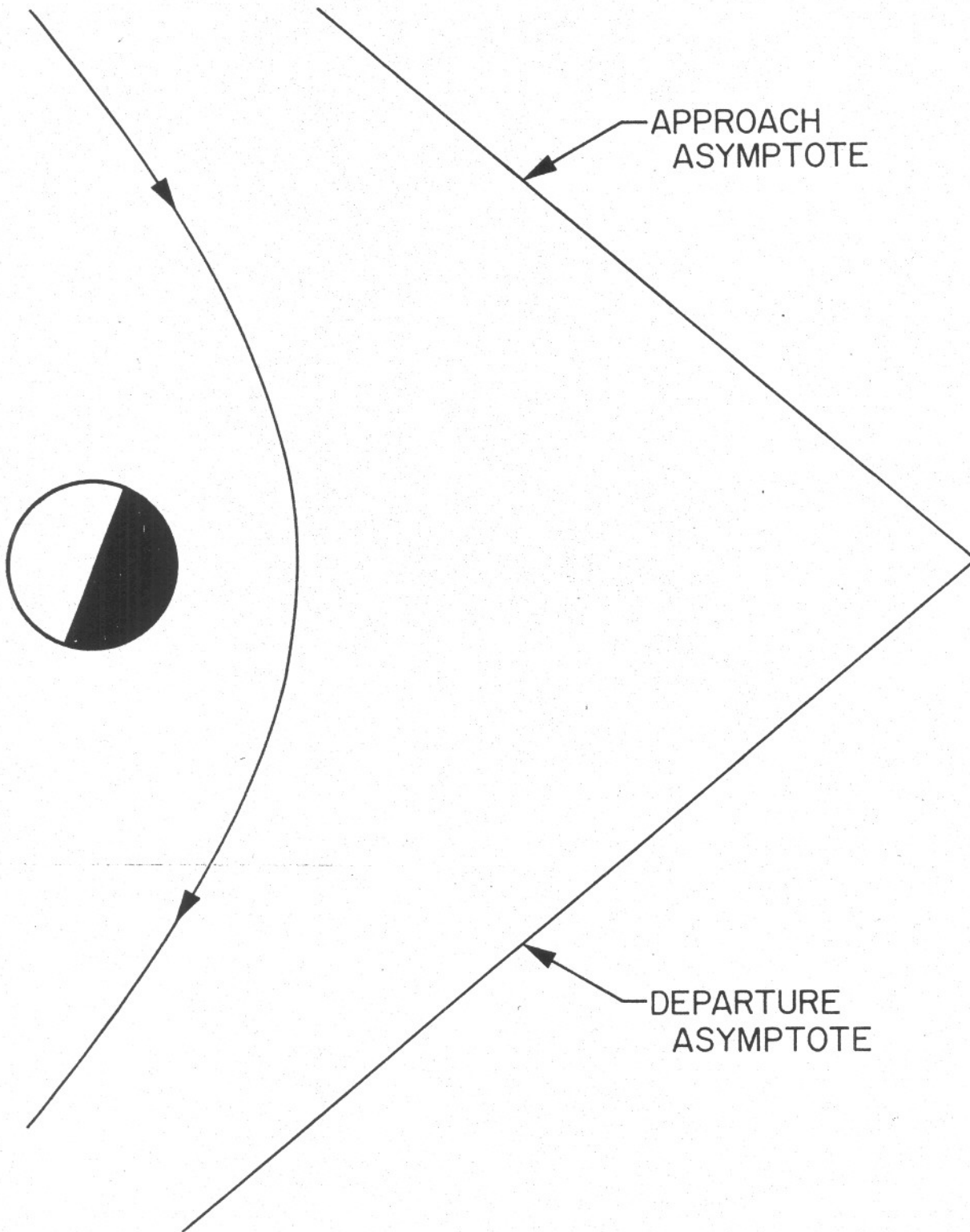


Fig. 51. \ October 11, 1978, Earth-Jupiter-Sun trajectory during its closest approach to Jupiter

Table 38. Earth-Venus minimum solar approach, launch date = Aug. 30, 1970

T_{12} (days)	HEV (km/sec)	θ_{12} (deg)	ϕ_{12} (deg)	a_1 (A. U.)	e_1	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	q_m (A. U.)
67.0	8.641	56.75	3.23	0.6775	0.4957	7078.	394.	33.744	0.82	0.	17.16	28.563	0.229
↓	↓	↓	↓	↓	↓	7582.	434.	↓	↓	500.	16.03	28.904	0.236
↓	↓	↓	↓	↓	↓	8099.	-93.	↓	↓	1000.	15.04	29.190	0.242
↓	↓	↓	↓	↓	↓	8562.	837.	↓	↓	1500.	14.17	29.484	0.247
71	7.635	63.13	2.75	0.7003	0.4469	7273.	412.	34.396	0.90	0.	20.23	28.861	0.256
↓	↓	↓	↓	↓	↓	7775.	513.	↓	↓	500.	18.94	29.217	0.263
↓	↓	↓	↓	↓	↓	8276.	-605.	↓	↓	1000.	17.80	29.516	0.270
↓	↓	↓	↓	↓	↓	8793.	438.	↓	↓	1500.	16.80	29.796	0.275
75	6.757	69.51	2.33	0.7220	0.4032	7497.	-573.	34.971	0.99	0.	23.78	29.077	0.281
↓	↓	↓	↓	↓	↓	8005.	-612.	↓	↓	500.	22.31	29.438	0.289
↓	↓	↓	↓	↓	↓	8531.	334.	↓	↓	1000.	21.01	29.761	0.295
↓	↓	↓	↓	↓	↓	9038.	367.	↓	↓	1500.	19.86	30.047	0.301
79	5.993	75.91	1.93	0.7424	0.3642	7773.	-622.	35.476	1.09	0.	27.86	29.248	0.302
↓	↓	↓	↓	↓	↓	8286.	-663.	↓	↓	500.	26.20	29.611	0.311
↓	↓	↓	↓	↓	↓	8821.	265.	↓	↓	1000.	24.72	29.940	0.317
↓	↓	↓	↓	↓	↓	9331.	296.	↓	↓	1500.	23.41	30.231	0.324
83	5.329	82.32	1.56	0.7612	0.3300	8074.	-969.	35.917	1.20	0.	32.50	29.398	0.323

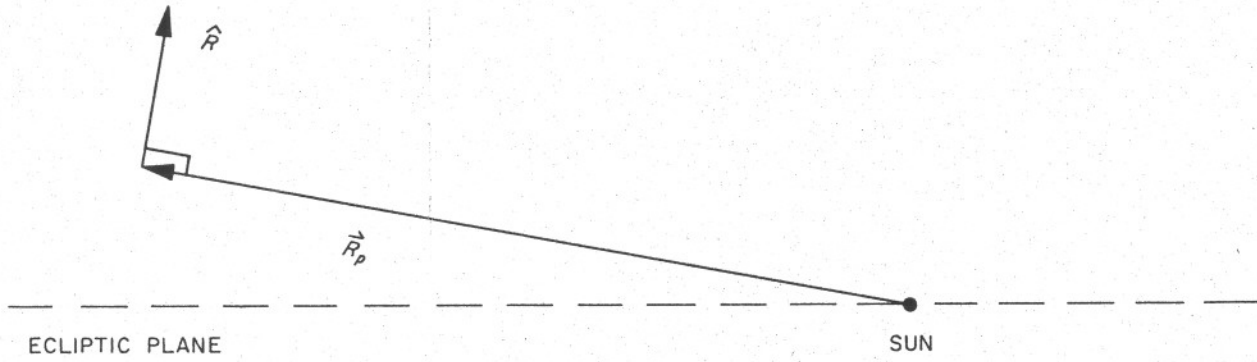


Fig. 52. Description of vectors \hat{R} and \vec{R}_P in relation to ecliptic plane of the Sun P

Table 39. EARTH-JUPITER out-of-ecliptic ($i = 90^\circ$), 1967 (launch HEV = 11.0 km/sec)

Launch Date (1967)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A.U.)	e_3	H_1 (A.U.)	H_2 (A.U.)	Perihelion (A.U.)	Period (days)
10/25	532.0	151.11	2.68	-1177224.	203334.	13.807	87.83	568013.	67.38	1.992	2.758	0.9756	0.6690	-0.5474	0.0673	4.580
10/27	524.0	148.67	2.49	-1083542.	299795.	14.059	86.25	523012.	68.54	3.218	2.814	0.9364	1.0485	-0.9296	0.1790	4.719
10/29	516.0	146.22	2.32	-999743.	352360.	14.317	84.68	482829.	69.59	4.125	2.874	0.8955	1.3384	-1.2224	0.3003	4.872
10/31	510.0	143.92	2.19	-946094.	376283.	14.502	83.59	457067.	70.28	4.675	2.920	0.8658	1.5189	-1.4050	0.3918	4.989
11/2	506.0	141.77	2.09	-917617.	386583.	14.607	82.98	443407.	70.65	4.965	2.947	0.8487	1.6159	-1.5033	0.4459	5.058
11/4	504.0	139.77	2.00	-911909.	388525.	14.630	82.85	440757.	70.70	5.027	2.953	0.8448	1.6370	-1.5246	0.4583	5.074
11/6	504.0	137.91	1.93	-928558.	383005.	14.570	83.19	448937.	70.46	4.867	2.937	0.8545	1.5832	-1.4701	0.4273	5.034
11/8	506.0	136.21	1.87	-969037.	367246.	14.427	84.01	468624.	69.91	4.468	2.902	0.8774	1.4506	-1.3358	0.3555	4.943
11/10	512.0	134.81	1.82	-1062579.	315787.	14.128	85.80	513724.	68.70	3.498	2.831	0.9248	1.1373	-1.0191	0.2129	4.762
11/12	522.0	133.70	1.79	-1228386.	105182.	13.686	88.59	593410.	66.66	1.042	2.734	0.9933	0.3826	-0.2597	0.0183	4.520

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Table 40. EARTH-JUPITER out-of-ecliptic ($i = 90^\circ$), 1968 (launch HEV = 11.0 km/sec)

Launch Date (1968)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A.U.)	e_3	H_1 (A.U.)	H_2 (A.U.)	Perihelion (A.U.)	Period (days)
11/20	544.0	154.84	2.83	-1282687.	-31901.	13.365	88.52	634904.	64.68	0.387	2.720	0.9991	-0.0727	0.1868	0.0024	4.487
11/22	532.0	152.06	2.58	-1126721.	-317191.	13.759	86.02	562535.	66.25	3.282	2.812	0.9340	-0.9511	1.0620	0.1856	4.717
11/24	522.0	149.44	2.39	-1013103.	-387699.	14.094	84.01	507948.	67.58	4.438	2.895	0.8792	-1.3262	1.4341	0.3497	4.926
11/26	514.0	146.96	2.23	-934036.	-417910.	14.359	82.49	469349.	68.59	5.185	2.965	0.8351	-1.5791	1.6844	0.4889	5.1051
11/28	508.0	144.63	2.11	-882714.	-431384.	14.550	81.43	443995.	69.28	5.665	3.018	0.8032	-1.7467	1.8500	0.5939	5.242
11/30	504.0	142.46	2.01	-854858.	-436905.	14.659	80.84	430089.	69.68	5.924	3.049	0.7847	-1.8395	1.9415	0.6564	5.324
12/2	500.0	140.28	1.91	-828287.	-441190.	14.768	80.25	416825.	70.06	6.175	3.081	0.7661	-1.9306	2.0314	0.7206	5.409
12/4	498.0	138.25	1.84	-822310.	-442017.	14.791	80.12	413776.	70.16	6.229	3.088	0.7620	-1.9502	2.0507	0.7349	5.427
12/6	498.0	136.37	1.77	-836550.	-440000.	14.727	80.46	420796.	69.98	6.087	3.069	0.7728	-1.8983	1.9995	0.6973	5.378
12/8	502.0	134.80	1.72	-893563.	-428860.	14.495	81.71	448924.	69.21	5.537	3.003	0.8120	-1.7017	1.8054	0.5646	5.203
12/10	508.0	133.37	1.67	-979256.	-402219.	14.186	83.44	490876.	68.11	4.720	2.919	0.8634	-1.4206	1.5274	0.3987	4.988
12/12	518.0	132.25	1.63	-1130091.	-315057.	13.730	86.14	563619.	66.30	3.189	2.807	0.9377	-0.9218	1.0325	0.1749	4.702

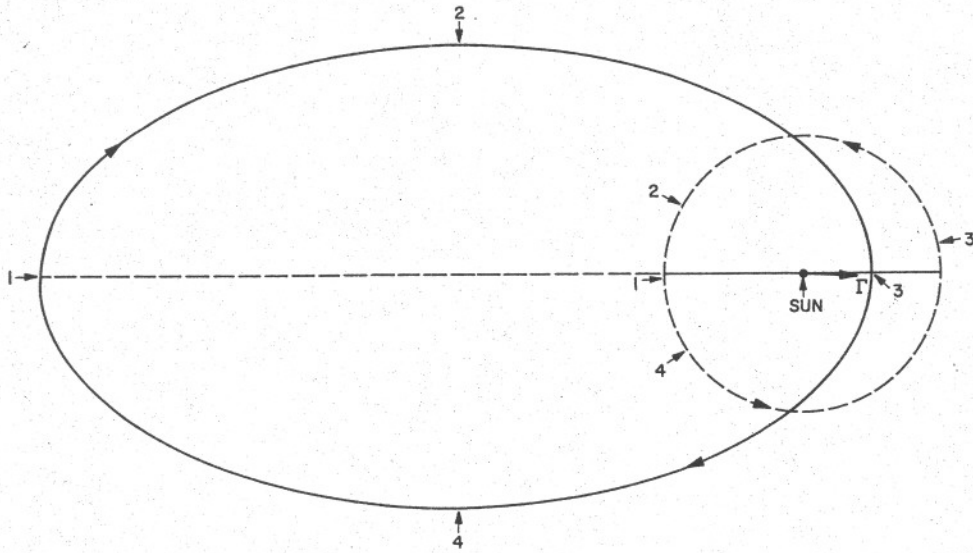


Fig. 53. Planetary configuration for Earth-Jupiter out-of-ecliptic, 1967 (Nov. 4 trajectory)

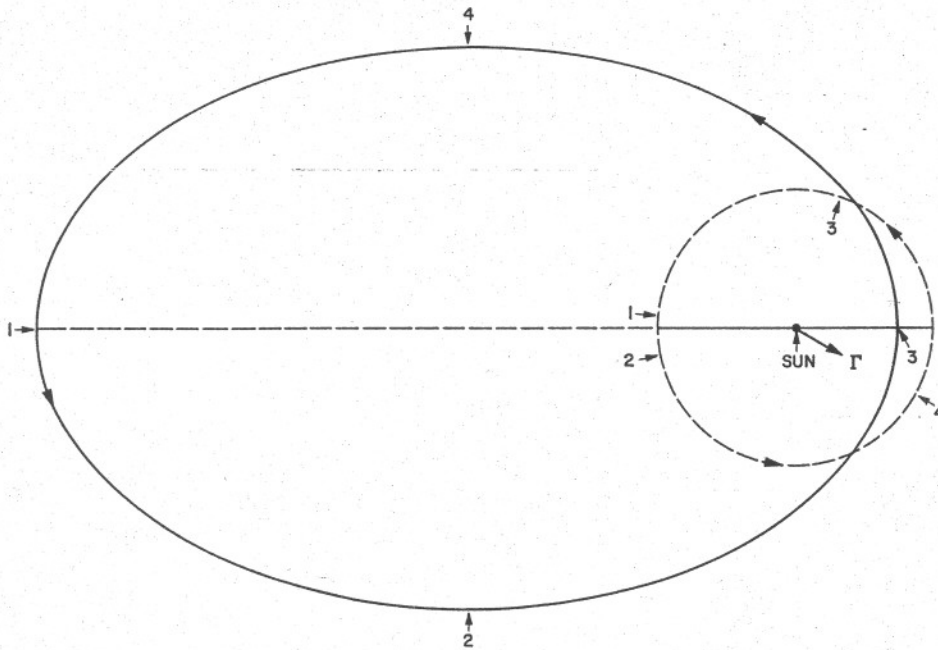


Fig. 54. Earth-Jupiter out-of-ecliptic trajectory, Dec. 4, 1968

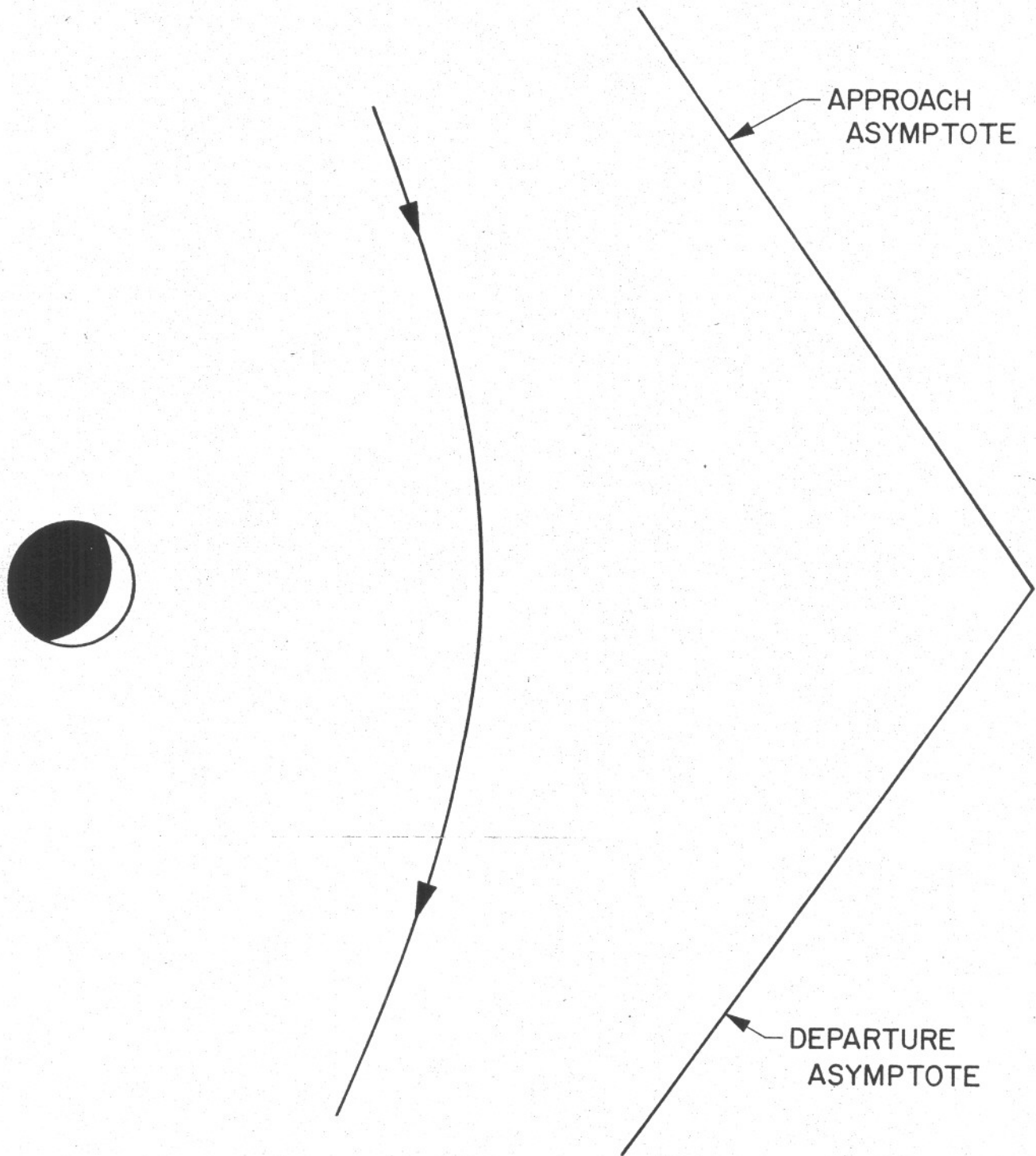


Fig. 55. December 4, 1968, Earth-Jupiter out-of-ecliptic trajectory during its closest approach to Jupiter

Table 41. Earth-Jupiter out-of-ecliptic, 1968 (i = 90 deg) (launch HEV = 11.0 km/sec)

Launch Date (1969-70)	T ₁₂ (days)	θ ₁₂ (deg)	φ ₁₂ (deg)	B·P̂ (km)	B·R̂ (km)	V ₁ (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V ₂ (km/sec)	a ₃ (A.U.)	e ₃	H ₁ (A.U.)	H ₂ (A.U.)	Perihelion (A.U.)	Period (days)
12/19	532.0	155.08	1.89	-1180897.	-258152.	13.538	84.66	595770.	64.42	2.647	2.739	0.9577	-0.7527	0.8257	0.1159	4.532
12/21	522.0	152.42	1.75	-1055230.	-361479.	13.875	82.67	534728.	65.92	4.069	2.823	0.8999	-1.1957	1.2674	0.2826	4.743
12/23	514.0	149.91	1.63	-968831.	-402524.	14.144	81.16	492085.	67.04	4.917	2.894	0.8538	-1.4717	1.5422	0.4231	4.9233
12/25	506.0	147.41	1.53	-890707.	-426654.	14.420	79.67	453134.	68.11	5.664	2.972	0.8059	-1.7250	1.7940	0.5769	5.1226
12/27	498.0	144.90	1.45	-819821.	-440002.	14.703	78.19	417468.	69.13	6.349	3.057	0.7561	-1.9674	2.0347	0.7456	5.3449
12/29	492.0	142.55	1.38	-774035.	-444731.	14.905	77.17	394193.	69.83	6.802	3.122	0.7200	-2.1338	2.1996	0.8742	5.516
12/31	488.0	140.36	1.32	-749332.	-446069.	15.021	76.60	381523.	70.22	7.050	3.160	0.6992	-2.2273	2.2922	0.9505	5.618
1/2	486.0	138.32	1.27	-743706.	-446195.	15.048	76.47	378556.	70.32	7.104	3.169	0.6945	-2.2478	2.3125	0.9681	5.641
1/4	484.0	136.28	1.22	-738458.	-446357.	15.072	76.34	375836.	70.41	7.156	3.177	0.6901	-2.2675	2.3319	0.9846	5.663
1/6	486.0	134.56	1.17	-770498.	-444764.	14.916	77.11	392091.	69.93	6.823	3.125	0.7183	-2.1415	2.2070	0.8803	5.523
1/8	488.0	132.83	1.13	-804563.	-441715.	14.759	77.88	409373.	69.42	6.479	3.074	0.7460	-2.0142	2.0808	0.7808	5.390
1/10	494.0	131.42	1.09	-883988.	-428143.	14.432	79.56	449354.	68.28	5.700	2.975	0.8035	-1.7373	1.8057	0.5846	5.132
1/12	504.0	130.32	1.05	-1024457.	-378081.	13.951	82.18	519103.	66.39	4.334	2.843	0.8865	-1.2807	1.3513	0.3227	4.792

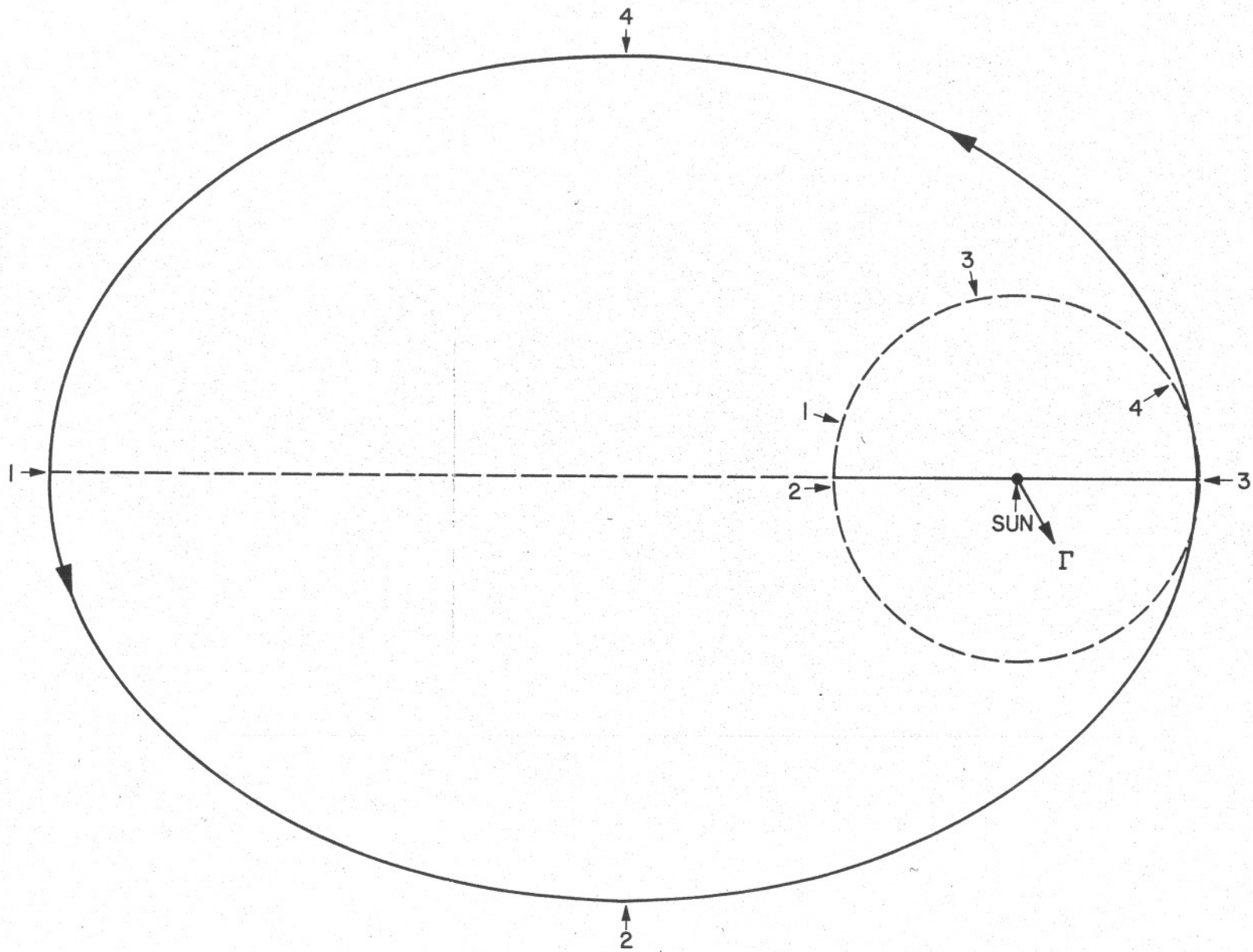


Fig. 56. Planetary configuration for Earth-Jupiter-escape, 1969-70 (January 4 trajectory)

Table 42. Earth-Jupiter out-of-ecliptic, 1971 ($i = 90$ deg) (launch HEV = 11.0 km/sec)

Launch Date (1971)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A. U.)	e_3	H_1 (A. U.)	H_2 (A. U.)	Perihelion (A. U.)	Period (days)
1/19	516.0	154.13	0.38	-1142994.	-242192.	13.720	81.03	576538.	63.96	2.625	2.674	0.9593	-0.7475	0.7623	0.1088	4.372
1/21	506.0	151.44	0.38	-1014727.	-348577.	14.072	79.08	513485.	65.62	4.180	2.763	0.8968	-1.2150	1.2306	0.2851	4.594
1/23	496.0	148.75	0.38	-904222.	-397309.	14.438	77.15	458511.	67.14	5.333	2.863	0.8319	-1.5807	1.5969	0.4813	4.8440
1/25	490.0	146.39	0.37	-850486.	-411859.	14.644	76.12	431391.	67.94	5.880	2.922	0.7956	-1.7618	1.7782	0.5973	4.9936
1/27	482.0	143.86	0.36	-780424.	-424121.	14.942	74.67	395913.	69.01	6.606	3.013	0.7418	-2.0121	2.0287	0.7780	5.230
1/29	478.0	141.67	0.35	-754392.	-426652.	15.064	74.09	382542.	69.43	6.880	3.052	0.7199	-2.1095	2.1262	0.8549	5.331
1/31	474.0	139.48	0.34	-729578.	-428271.	15.186	73.53	369799.	69.83	7.146	3.092	0.6978	-2.2062	2.2228	0.9344	5.436
2/2	470.0	137.28	0.33	-705919.	-429111.	15.307	72.97	357647.	70.22	7.405	3.134	0.6755	-2.3023	2.3189	1.0170	5.547
2/4	468.0	135.25	0.32	-700896.	-429163.	15.334	72.84	355044.	70.31	7.460	3.143	0.6707	-2.3228	2.3393	1.0350	5.571
2/6	468.0	133.39	0.30	-714155.	-428827.	15.264	73.16	361842.	70.09	7.312	3.118	0.6836	-2.2673	2.2837	0.9865	5.505
2/8	470.0	131.69	0.29	-746940.	-427060.	15.099	73.91	378638.	69.56	6.954	3.062	0.7139	-2.1359	2.1522	0.8760	5.358
2/10	474.0	130.15	0.26	-802432.	-420699.	14.843	75.12	406916.	68.68	6.366	2.980	0.7603	-1.9276	1.9436	0.7143	5.144
2/12	482.0	128.95	0.24	-910074.	-394709.	14.418	77.23	461177.	67.08	5.258	2.854	0.8366	-1.556	1.5712	0.4663	4.822
2/14	494.0	128.07	0.20	-1094936.	-290331.	13.844	80.29	552834.	64.57	3.241	2.702	0.9380	-0.9298	0.9438	0.1675	4.443

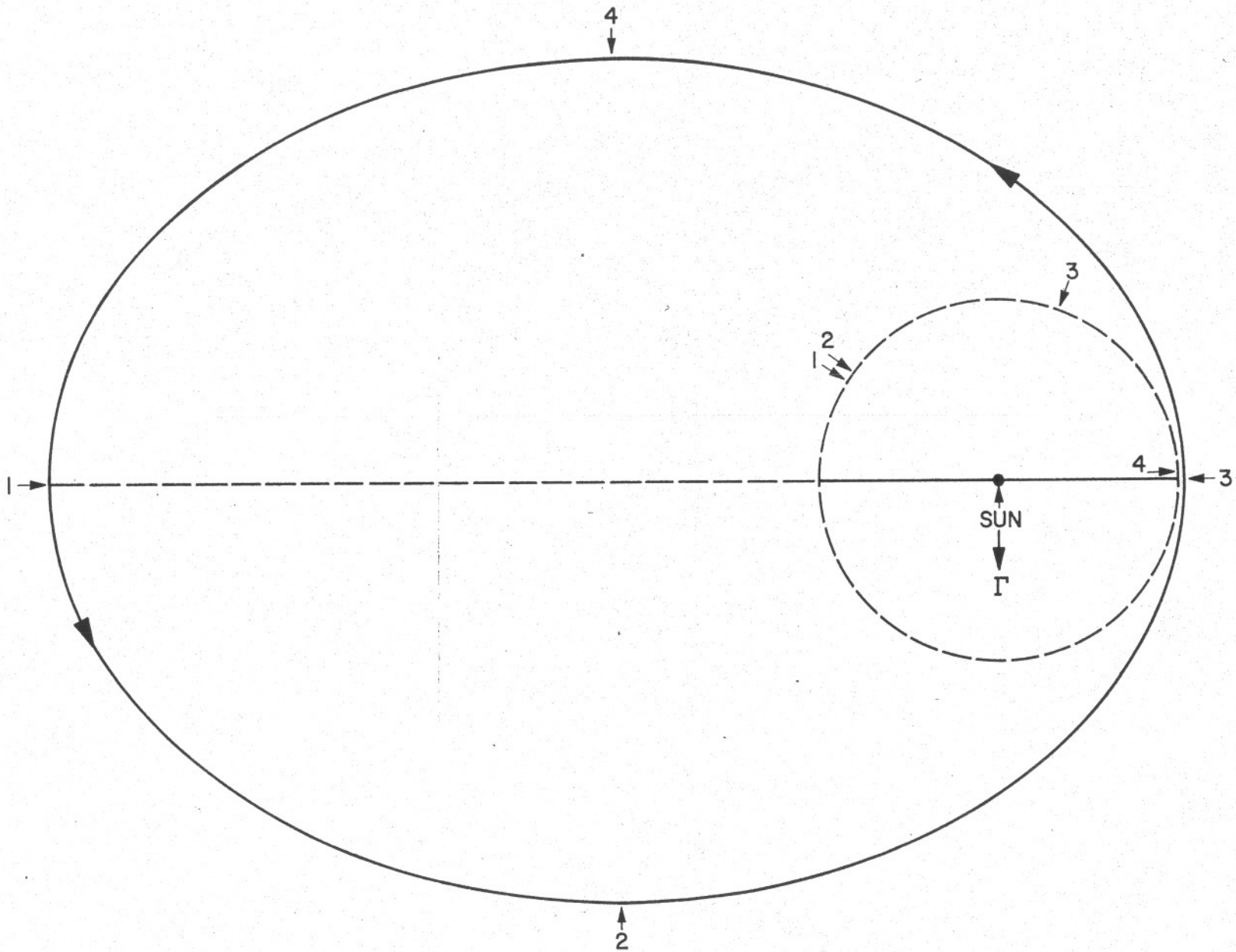


Fig. 57. Planetary configuration for Earth-Jupiter out-of-ecliptic, 1971 (February 4 configuration)

Table 43. EARTH-JUPITER out-of-ecliptic ($i = 90^\circ$), 1972 (launch HEV = 11.0 km/sec)

Launch Date (1972)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A.U.)	e_3	H_1 (A.U.)	H_2 (A.U.)	Perihelion (A.U.)	Period (yr)
2/23	492.0	150.51	1.09	-1065851.	-238225.	14.174	76.86	530469.	64.57	2.815	2.612	0.9544	-0.8034	0.7566	0.1191	4.221
2/25	484.0	147.98	0.99	-969033.	-317506.	14.464	75.37	482719	65.93	4.094	2.683	0.9035	-1.1721	1.1274	0.2589	4.394
2/27	476.0	145.46	0.91	-883634.	-359806.	14.761	73.90	440376.	67.17	5.086	2.760	0.8511	-1.4703	1.4279	0.4109	4.585
2/29	470.0	143.10	0.85	-829462.	-377768.	14.358	72.87	413297.	67.99	5.695	2.818	0.8132	-1.6606	1.6199	0.5264	4.731
3/2	464.0	140.75	0.79	-779378.	-389594.	15.194	71.86	388158.	68.77	6.260	2.881	0.7742	-1.8430	1.8039	0.6505	4.890
3/4	460.0	138.58	0.75	-752725.	-394095.	15.320	71.30	374693.	69.20	6.564	2.918	0.7517	-1.9437	1.9056	0.7245	4.985
3/6	456.0	136.40	0.72	-727411.	-397399.	15.446	70.74	361893.	69.61	6.857	2.957	0.7290	-2.0427	2.0055	0.8013	5.085
3/8	454.0	134.40	0.69	-722154.	-397913.	15.474	70.61	359233.	69.70	6.920	2.965	0.7241	-2.0639	2.0269	0.8180	5.107
3/10	454.0	132.58	0.68	-736561.	-396178.	15.403	70.92	366543.	69.45	6.754	2.943	0.7372	-2.0073	1.9695	0.7734	5.048
3/12	456.0	130.92	0.67	-772217.	-390552.	15.235	71.68	384554.	68.87	6.346	2.891	0.7680	-1.8710	1.8318	0.6707	4.914
3/14	458.0	129.27	0.66	-810318.	-382372.	14.445	72.45	403779.	68.25	5.918	2.841	0.7983	-1.7316	1.6910	0.5730	4.789
3/16	464.0	127.97	0.67	-899392.	-352550.	14.715	74.12	448279.	66.89	4.918	2.744	0.8608	-1.4185	1.3750	0.3819	4.546
3/18	474.0	127.02	0.69	-1060640.	-241646.	14.202	76.72	527843.	64.61	2.902	2.614	0.9516	-0.8280	0.7803	0.1265	4.227

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Table 44. EARTH-JUPITER out-of-ecliptic ($i = 90^\circ$), 1973 (launch HEV = 11.0 km/sec)

Launch Date (1973)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$B \cdot R$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A.U.)	e_3	H_1 (A.U.)	H_2 (A.U.)	Perihelion (A.U.)	Period (yr)
4/2	470.0	145.60	1.96	-1023620.	-185725.	14.666	74.07	496641.	65.46	2.331	2.537	0.9694	-0.6721	0.5770	0.0776	4.040
4/4	464.0	143.27	1.85	-956184.	-256970.	14.879	73.02	463747.	66.44	3.434	2.584	0.9336	-0.9736	0.8807	0.1716	4.154
4/6	458.0	140.94	1.74	-895074.	-299362.	15.095	71.98	433960.	67.34	4.274	2.634	0.8971	-1.2102	1.1195	0.2708	4.2754
4/8	454.0	138.79	1.67	-862799.	-316347.	15.221	71.39	418167.	67.82	4.692	2.664	0.8760	-1.3305	1.2412	0.3303	4.348
4/10	450.0	136.65	1.59	-832224.	-329917.	15.346	70.81	403218.	68.28	5.080	2.695	0.8546	-1.4442	1.3562	0.3919	4.4243
4/12	448.0	134.69	1.54	-825898.	-332334.	15.375	70.69	400121.	68.37	5.161	2.702	0.8499	-1.4682	1.3805	0.4056	4.441
4/14	446.0	132.73	1.49	-819961.	-334631.	15.401	70.56	397267.	68.45	5.239	2.709	0.8454	-1.4913	1.4038	0.4185	4.458
4/16	446.0	130.96	1.45	-837531.	-327575.	15.330	70.89	405936.	68.17	5.023	2.690	0.8579	-1.4273	1.3390	0.3822	4.412
4/18	450.0	129.54	1.43	-905836.	-292210.	15.068	72.12	439301	67.14	4.149	2.626	0.9030	-1.1744	1.0831	0.2547	4.254
4/20	454.0	128.13	1.41	-981700.	-232681.	14.810	73.38	476230	66.03	3.071	2.566	0.9469	-0.8733	0.7792	0.1363	4.110

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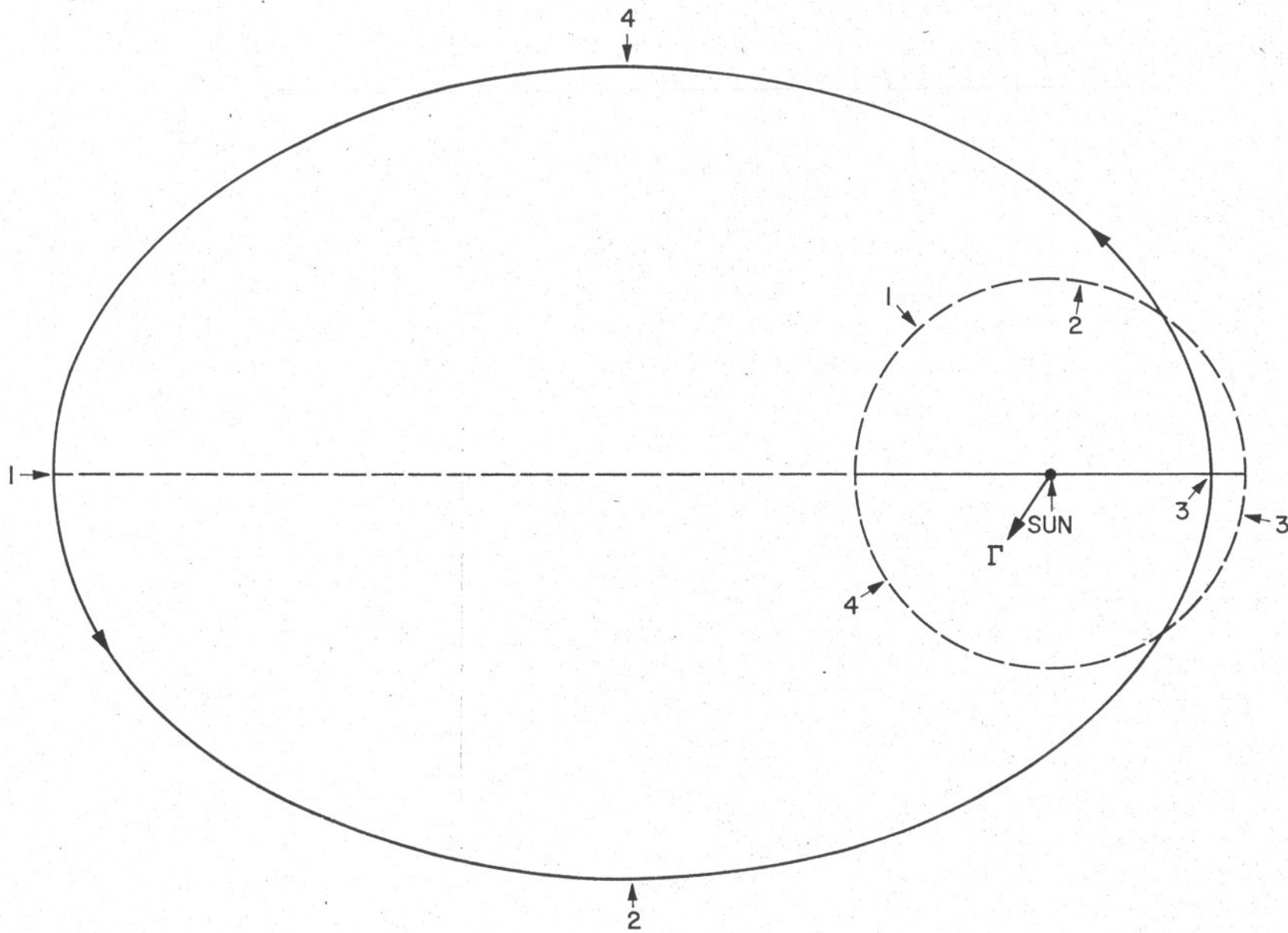


Fig. 58. Planetary configuration for Earth-Jupiter out-of-ecliptic 1972 (March 8 trajectory)

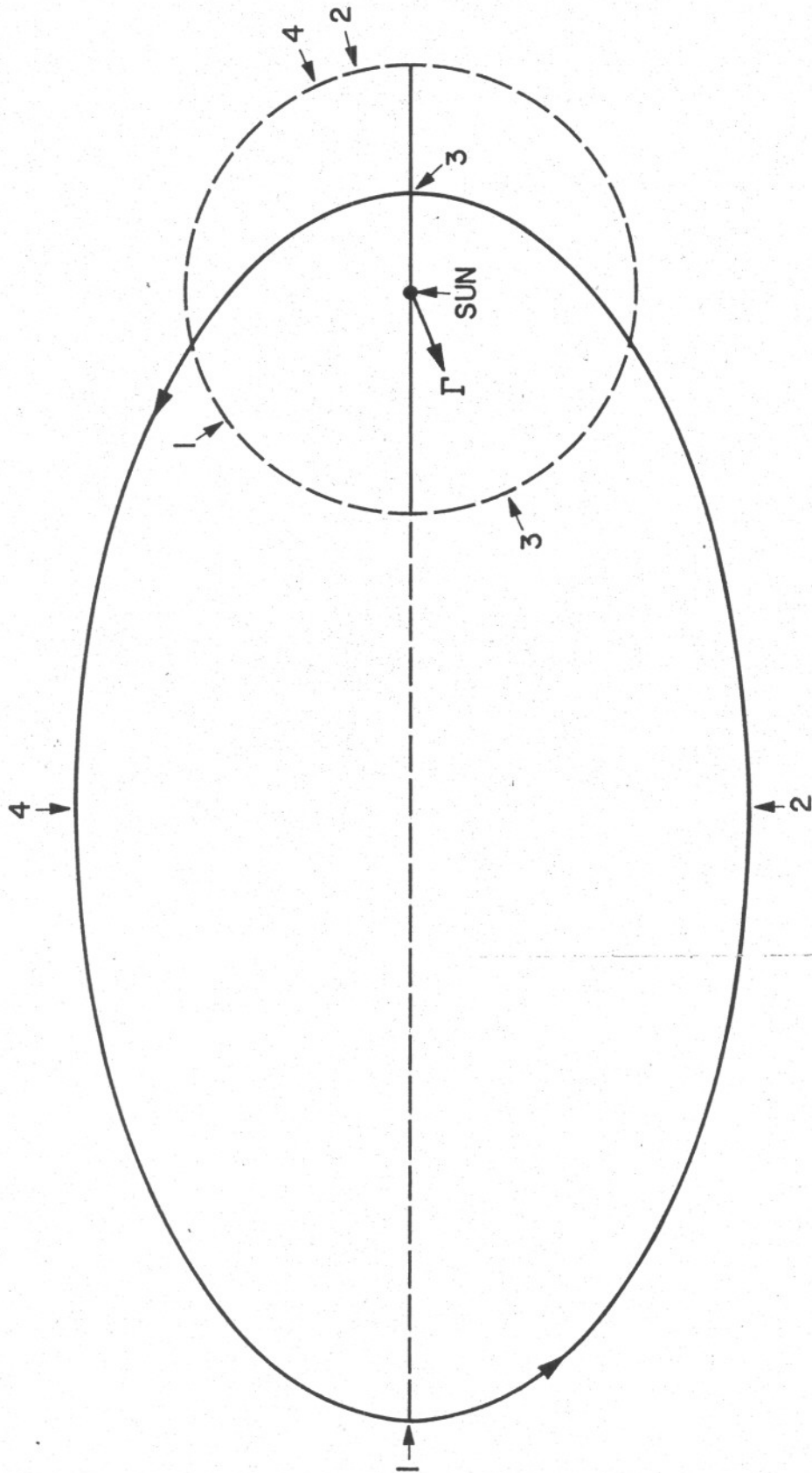


Fig. 59. Earth-Jupiter out-of-ecliptic, April 14, 1973 trajectory

Table 45. Earth-Jupiter out-of-ecliptic, 1974 ($i = 90$ deg) (launch HEV = 11.5 km/sec)

Launch Date (1974)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A. U.)	e_3	H_1 (A. U.)	H_2 (A. U.)	Perihelion (A. U.)	Period (yr)
5/7	456.0	146.81	2.38	-947209.	-207158.	15.242	72.31	446875.	67.50	2.753	2.530	0.9577	-0.7854	0.6751	0.1070	4.024
5/9	448.0	144.33	2.24	-861302.	-276835.	15.564	70.78	405837.	68.76	4.087	2.597	0.9068	-1.1501	1.0429	0.2420	4.186
5/11	440.0	141.85	2.11	-784763.	-314622.	15.896	69.26	369158.	69.91	5.134	2.673	0.8528	-1.4488	1.3449	0.3935	4.370
5/13	436.0	139.74	2.02	-756309.	-324523.	16.037	68.66	355386.	70.36	5.513	2.706	0.8303	-1.5600	1.4576	0.4592	4.451
5/15	430.0	137.44	1.93	-709564.	-337437.	16.278	67.62	332822.	71.11	6.135	2.767	0.7898	-1.7477	1.6481	0.5812	4.603
5/17	426.0	135.33	1.86	-684543.	-342551.	16.420	67.03	320689.	71.52	6.472	2.804	0.7661	-1.8519	1.7540	0.6559	4.696
5/19	422.0	133.23	1.79	-660695.	-346447.	16.561	66.45	309120.	71.91	6.798	2.843	0.7420	-1.9546	1.8585	0.7335	4.7940
5/21	420.0	131.30	1.74	-655536.	-347136.	16.595	66.32	306639.	71.99	6.871	2.852	0.7364	-1.9781	1.8823	0.7518	4.817
5/23	420.0	129.56	1.69	-668677.	-345186.	16.520	66.63	313079.	71.75	6.696	2.831	0.7497	-1.9222	1.8255	0.7086	4.762
5/25	420.0	127.83	1.65	-682423.	-342908.	16.441	66.95	319843.	71.51	6.515	2.809	0.7631	-1.8651	1.7675	0.6655	4.708
5/27	422.0	126.27	1.62	-716254.	-335780.	16.257	67.73	336338.	70.93	6.068	2.760	0.7944	-1.7270	1.6271	0.5675	4.585
5/29	426.0	124.90	1.59	-773465.	-318550.	15.970	68.97	364044.	70.01	5.317	2.689	0.8422	-1.5020	1.3989	0.4243	4.408
5/31	432.0	123.72	1.57	-860101.	-277126.	15.589	70.69	405651.	68.68	4.147	2.601	0.9040	-1.1668	1.0598	0.2497	4.195
6/2	442.0	122.90	1.55	-1015045.	-97393.	15.034	73.38	479421.	66.50	1.259	2.487	0.9912	-0.3908	0.2787	0.0219	3.923

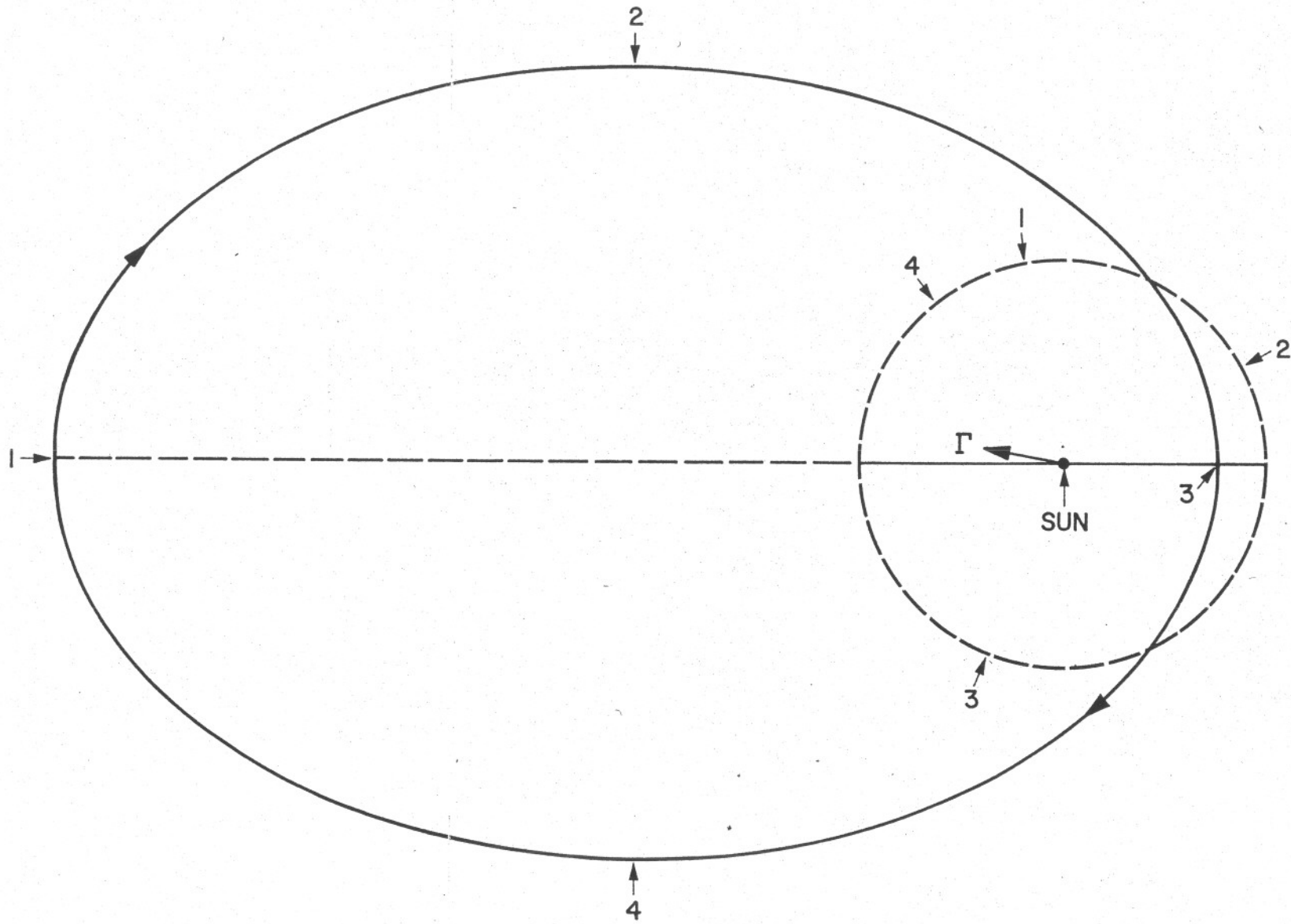


Fig. 60. Earth-Jupiter out-of-ecliptic, May 21, 1974 trajectory

Table 46. Earth-Jupiter out-of-ecliptic, 1975 ($i = 90$ deg) (launch HEV = 11.5 km/sec)

Launch Date (1975)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A. U.)	e_3	H_1 (A. U.)	H_2 (A. U.)	Perihelion (A. U.)	Period (yr)
6/15	458.0	146.58	1.81	-971288.	161200.	15.352	74.19	448904.	68.59	2.213	2.534	0.9724	0.5495	-0.6354	0.0699	4.033
6/17	452.0	144.31	1.72	-909104.	234638.	15.576	73.08	420412.	69.42	3.379	2.581	0.9357	0.8693	-0.9539	0.1659	4.147
6/19	444.0	141.87	1.64	-828846.	291207.	15.899	71.51	383347.	70.54	4.571	2.654	0.8823	1.2082	-1.2909	0.3124	4.323
6/21	440.0	139.78	1.57	-798373.	306092.	16.035	70.88	369003.	71.00	4.983	2.685	0.8602	1.3290	-1.4108	0.3754	4.400
6/23	434.0	137.51	1.51	-748941.	325298.	16.270	69.81	345819.	71.74	5.643	2.743	0.8207	1.5274	-1.6075	0.4918	4.542
6/25	432.0	135.60	1.46	-741861.	327382.	16.306	69.66	342344.	71.88	5.732	2.751	0.8151	1.5546	-1.6344	0.5087	4.564
6/27	428.0	133.52	1.41	-715654.	334873.	16.441	69.05	329957.	72.29	6.078	2.786	0.7921	1.6619	-1.7406	0.5792	4.651
6/29	426.0	131.61	1.37	-709503.	336413.	16.472	68.92	327000.	72.40	6.157	2.795	0.7866	1.6868	-1.7652	0.5965	4.672
7/1	426.0	129.88	1.33	-722964.	332923.	16.399	69.24	333306.	72.20	5.975	2.776	0.7991	1.6300	-1.7089	0.5577	4.625
7/3	428.0	128.34	1.29	-757437.	322251.	16.222	70.04	349479.	71.68	5.513	2.731	0.8289	1.4883	-1.5685	0.4673	4.513
7/5	432.0	126.97	1.26	-816301.	297436.	15.946	71.32	376973.	70.82	4.716	2.665	0.8748	1.2510	-1.3329	0.3337	4.350
7/7	436.0	125.60	1.23	-881067.	257752.	15.674	72.62	407057.	69.89	3.787	2.604	0.9192	0.9844	-1.0678	0.2104	4.202

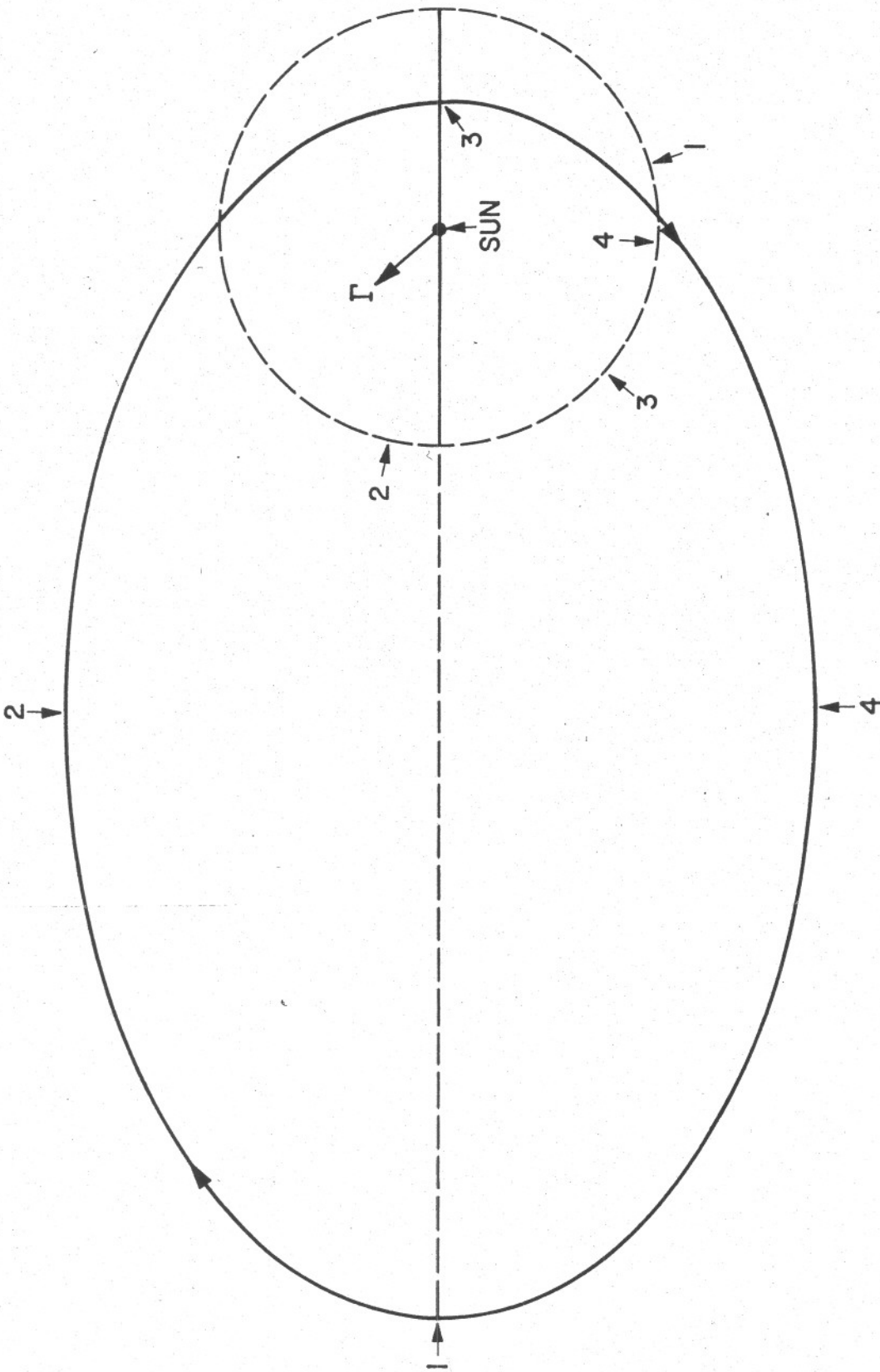


Fig. 61. Earth-Jupiter out-of-ecliptic, June 29, 1975 trajectory

Table 47. Earth-Jupiter out-of-ecliptic, 1976 (i = 90 deg) (launch HEV = 11.5 km/sec)

Launch Date (1976)	T ₁₂ (days)	θ ₁₂ (deg)	φ ₁₂ (deg)	$\bar{B} \cdot \hat{T}$ (km)	$\bar{B} \cdot \hat{R}$ (km)	V ₁ (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V ₂ (km/sec)	a ₃ (A. U.)	e ₃	H ₁ (A. U.)	H ₂ (A. U.)	Perihelion (A. U.)	Period (yr)
7/21	472.0	148.15	0.57	-994426.	166538.	15.200	77.70	454564.	69.81	2.270	2.598	0.9703	0.6158	-0.6421	0.0772	4.187
7/23	464.0	145.73	0.55	-907687.	258330.	15.504	76.08	414697.	71.00	3.743	2.666	0.9192	1.0366	-1.0632	0.2154	4.353
7/25	458.0	143.47	0.53	-852189.	293963.	15.724	74.95	389002.	71.79	4.511	2.717	0.8827	1.2635	-1.2901	0.3187	4.478
7/27	452.0	141.22	0.52	-800835.	318063.	15.947	73.84	365134.	72.54	5.180	2.771	0.8453	1.4671	-1.4937	0.4287	4.613
7/29	448.0	139.13	0.50	-772915.	328269.	16.078	73.21	352057.	72.96	5.535	2.804	0.8234	1.5777	-1.6043	0.4952	4.695
7/31	444.0	137.05	0.49	-746346.	336455.	16.208	72.58	339613.	73.37	5.872	2.838	0.8013	1.6847	-1.7112	0.5639	4.781
8/2	442.0	135.14	0.47	-739951.	338178.	16.241	72.44	336573.	73.48	5.952	2.847	0.7958	1.7105	-1.7369	0.5814	4.803
8/4	440.0	133.22	0.46	-733935.	339811.	16.271	72.30	333757.	73.57	6.029	2.855	0.7906	1.7353	-1.7616	0.5978	4.824
8/6	440.0	131.48	0.44	-747471.	336231.	16.200	72.63	340097.	73.37	5.856	2.837	0.8023	1.6801	-1.7063	0.5609	4.778
8/8	442.0	129.91	0.42	-781861.	325375.	16.031	73.45	356175.	72.85	5.419	2.794	0.8307	1.5421	-1.5682	0.4730	4.669
8/10	446.0	128.50	0.40	-840467.	300445.	15.767	74.75	383453.	71.99	4.663	2.729	0.8746	1.3102	-1.3361	0.3422	4.509
8/12	452.0	127.27	0.37	-929517.	241314.	15.416	76.56	424662.	70.73	3.416	2.649	0.9327	0.9429	-0.9684	0.1783	4.311

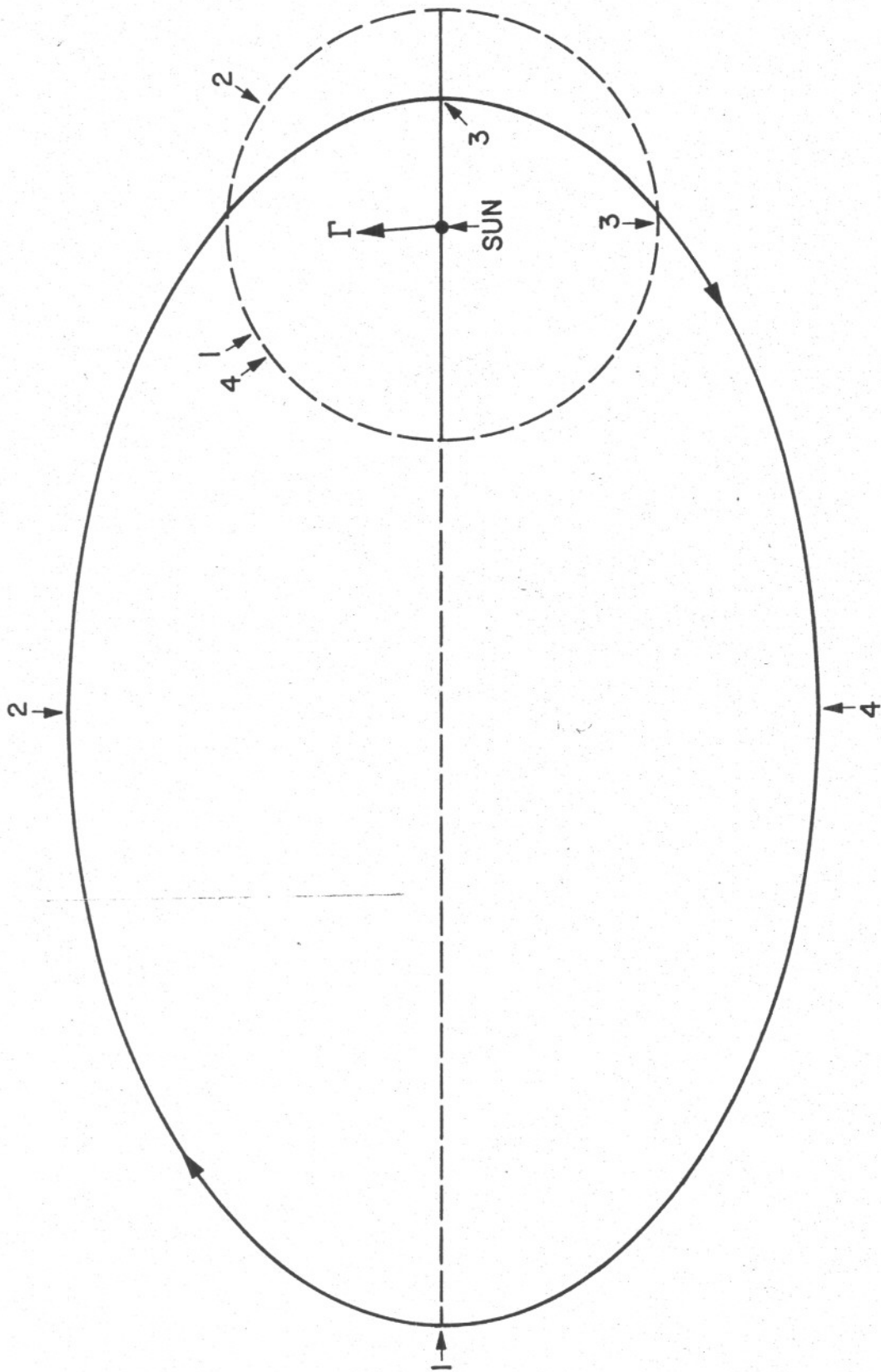


Fig. 62.. Earth-Jupiter out-of-ecliptic, August 4, 1976 trajectory

Table 48. Earth-Jupiter out-of-ecliptic, 1977 (i = 90 deg) (launch HEV = 11.5 km/sec)

Launch Date (1977)	T ₁₂ (days)	θ ₁₂ (deg)	φ ₁₂ (deg)	$\vec{B} \cdot \hat{T}$ (km)	$\vec{B} \cdot \hat{R}$ (km)	V ₁ (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V ₂ (km/sec)	a ₃ (A. U.)	e ₃	H ₁ (A. U.)	H ₂ (A. U.)	Perihelion (A. U.)	Period (yr)
8/23	478.0	152.07	1.05	-1079469.	130883.	14.668	82.67	498017.	69.45	1.635	2.656	0.9841	0.4942	-0.4495	0.0422	4.328
8/25	488.0	149.49	0.94	-962042.	271248.	15.033	80.54	443172.	71.05	3.607	2.739	0.9228	1.0768	-1.0347	0.2115	4.533
8/27	480.0	147.07	0.86	-882974.	319025.	15.326	78.93	406269.	72.14	4.599	2.809	0.8745	1.3823	-1.3423	0.3525	4.707
8/29	474.0	144.82	0.80	-832091.	340286.	15.538	77.80	382404.	72.87	5.201	2.861	0.8395	1.5739	-1.5354	0.4592	4.840
8/31	468.0	142.56	0.74	-784733.	355116.	15.752	76.69	360154.	73.56	5.755	2.918	0.8035	1.755	-1.7182	0.5734	4.983
9/2	462.0	140.30	0.70	-740568.	365228.	15.970	75.59	339354.	74.21	6.275	2.978	0.7665	1.9304	-1.8949	0.6954	5.139
9/4	458.0	138.20	0.66	-716682.	369310.	16.096	74.97	328071.	74.58	6.560	3.014	0.7448	2.0288	-1.9942	0.7692	5.233
9/6	456.0	136.26	0.64	-711131.	370145.	16.127	74.82	325456.	74.66	6.628	3.024	0.7395	2.053	-2.0181	0.7878	5.258
9/8	454.0	134.32	0.62	-705916.	370960.	16.155	74.68	323041.	74.73	6.693	3.033	0.7344	2.0756	-2.0412	0.8056	5.281
9/10	454.0	132.54	0.61	-718544.	369274.	16.086	75.02	329094.	74.53	6.545	3.013	0.7460	2.0239	-1.9890	0.7653	5.230
9/12	458.0	131.08	0.61	-769048.	359538.	15.828	76.31	353019.	73.76	5.952	2.940	0.7899	1.8218	-1.7848	0.6177	5.042
9/14	462.0	129.62	0.61	-823962.	343931.	15.573	77.62	378979.	72.94	5.316	2.873	0.8323	1.6124	-1.5735	0.4818	4.870
9/16	470.0	128.48	0.62	-930085.	294339.	15.146	79.92	428746.	71.43	4.052	2.769	0.9025	1.2137	-1.1715	0.2700	4.608

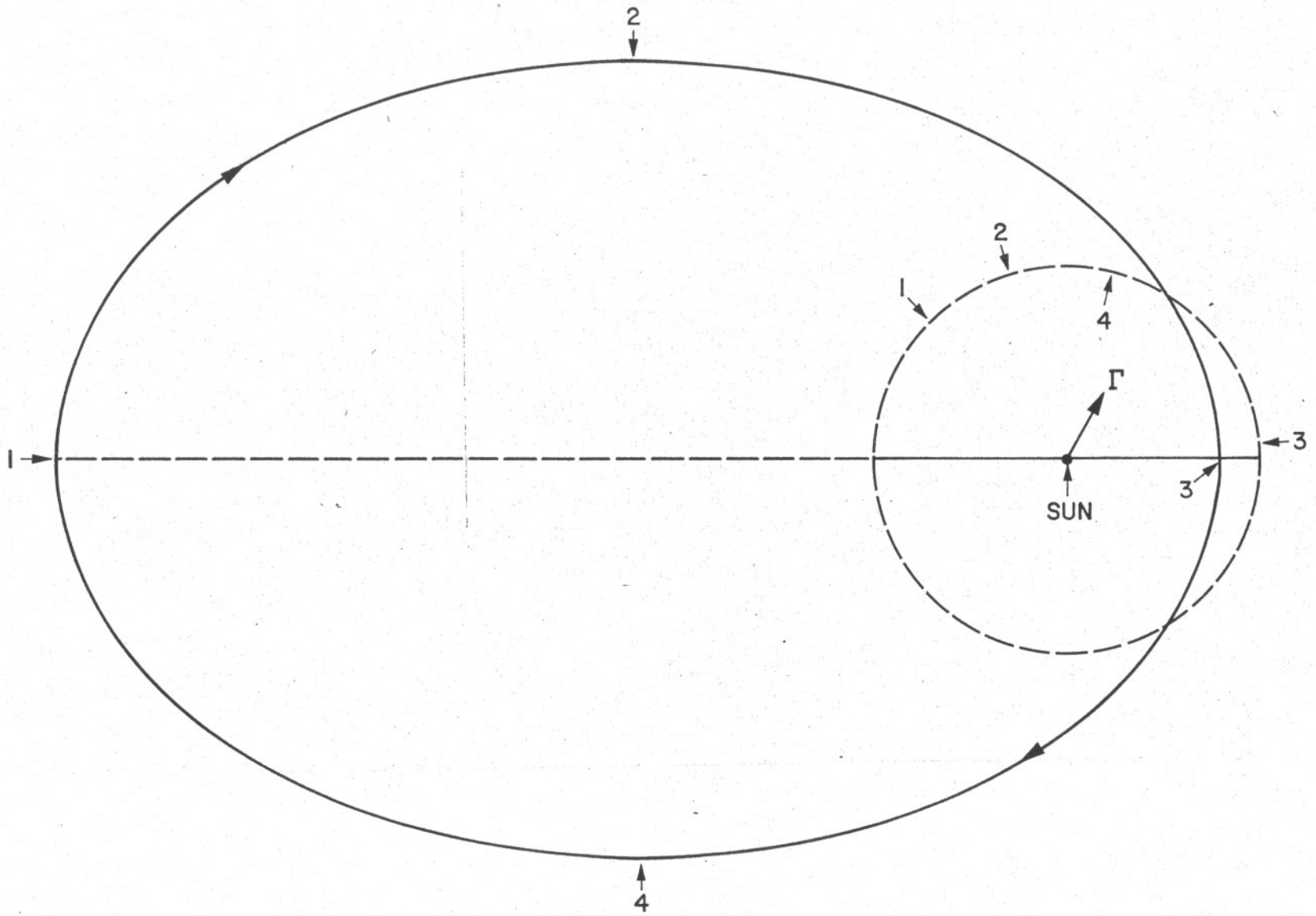


Fig. 63. Earth-Jupiter out-of-ecliptic, September 8, 1977 trajectory

Table 49. EARTH-JUPITER out-of-ecliptic ($i = 90^\circ$), 1978 (launch HEV = 11.5 km/sec)

Launch Date (1978)	T_{12} (days)	θ_{12} (deg)	ϕ_{12} (deg)	$\bar{E} \cdot \hat{T}$ (km)	$\bar{E} \cdot \hat{R}$ (km)	V_1 (km/sec)	TISI (days)	DOCA (km)	DA (deg)	V_2 (km/sec)	a_3 (A. U.)	e_3	H_1 (A. U.)	H_2 (A. U.)	Perihelion (A. U.)	Period (yr)
9/23	522.0	155.35	2.57	-1145171.	159999.	14.138	86.39	540474.	68.46	1.712	2.721	0.9822	0.5638	-0.4637	0.0484	4.487
9/25	512.0	152.77	2.33	-1024108.	292966.	14.482	84.28	482759.	70.06	3.469	2.798	0.9269	1.0994	-1.0030	0.2045	4.679
9/27	502.0	150.20	2.12	- 920056.	351153.	14.839	82.20	433366.	71.45	4.640	2.883	0.8692	1.4723	-1.3799	0.3771	4.895
9/29	492.0	147.61	1.96	- 828480.	381492.	15.208	80.14	389738.	72.72	5.619	2.979	0.8083	1.7988	-1.7107	0.5711	5.142
10/1	486.0	145.34	1.83	- 783361.	390924.	15.416	79.04	368112.	73.37	6.105	3.037	0.7737	1.9672	-1.8816	0.6873	5.292
10/3	480.0	143.06	1.73	- 741126.	396991.	15.626	77.96	347834.	73.99	6.569	3.098	0.7381	2.1325	-2.0495	0.8114	5.454
10/5	474.0	140.79	1.64	- 701518.	400415.	15.839	76.88	328773.	74.59	7.015	3.165	0.7013	2.297	-2.2163	0.9454	5.630
10/7	470.0	138.66	1.56	- 680192.	401388.	15.962	76.27	318503	74.91	7.263	3.205	0.6799	2.3898	-2.3112	1.0259	5.737
10/9	468.0	136.68	1.51	- 675518.	401567.	15.991	76.13	316308.	74.97	7.320	3.215	0.6748	2.4118	-2.3336	1.0455	5.764
10/11	466.0	134.71	1.45	- 671133.	401776.	16.017	76.00	314290.	75.02	7.376	3.224	0.6699	2.433	-2.355	1.0642	5.789
10/13	468.0	133.04	1.42	- 699453.	400875.	15.856	76.80	328138.	74.56	7.055	3.171	0.6979	2.3116	-2.2315	0.9580	5.648
10/15	470.0	131.37	1.39	- 729447.	398829.	15.693	77.61	342805.	74.07	6.724	3.121	0.7256	2.1894	-2.1071	0.8564	5.514
10/17	476.0	130.00	1.37	- 798717.	388953.	15.352	79.37	376333.	73.02	5.977	3.022	0.7830	1.9232	-1.8364	0.6558	5.252
10/19	486.0	128.95	1.37	- 919609.	352671.	14.851	82.12	434273	71.30	4.702	2.889	0.8657	1.4934	-1.4007	0.3880	4.911
10/21	500.0	128.20	1.37	-1117846.	204561.	14.213	85.90	528391.	68.70	2.292	2.741	0.9681	0.7391	-0.6392	0.0874	4.538

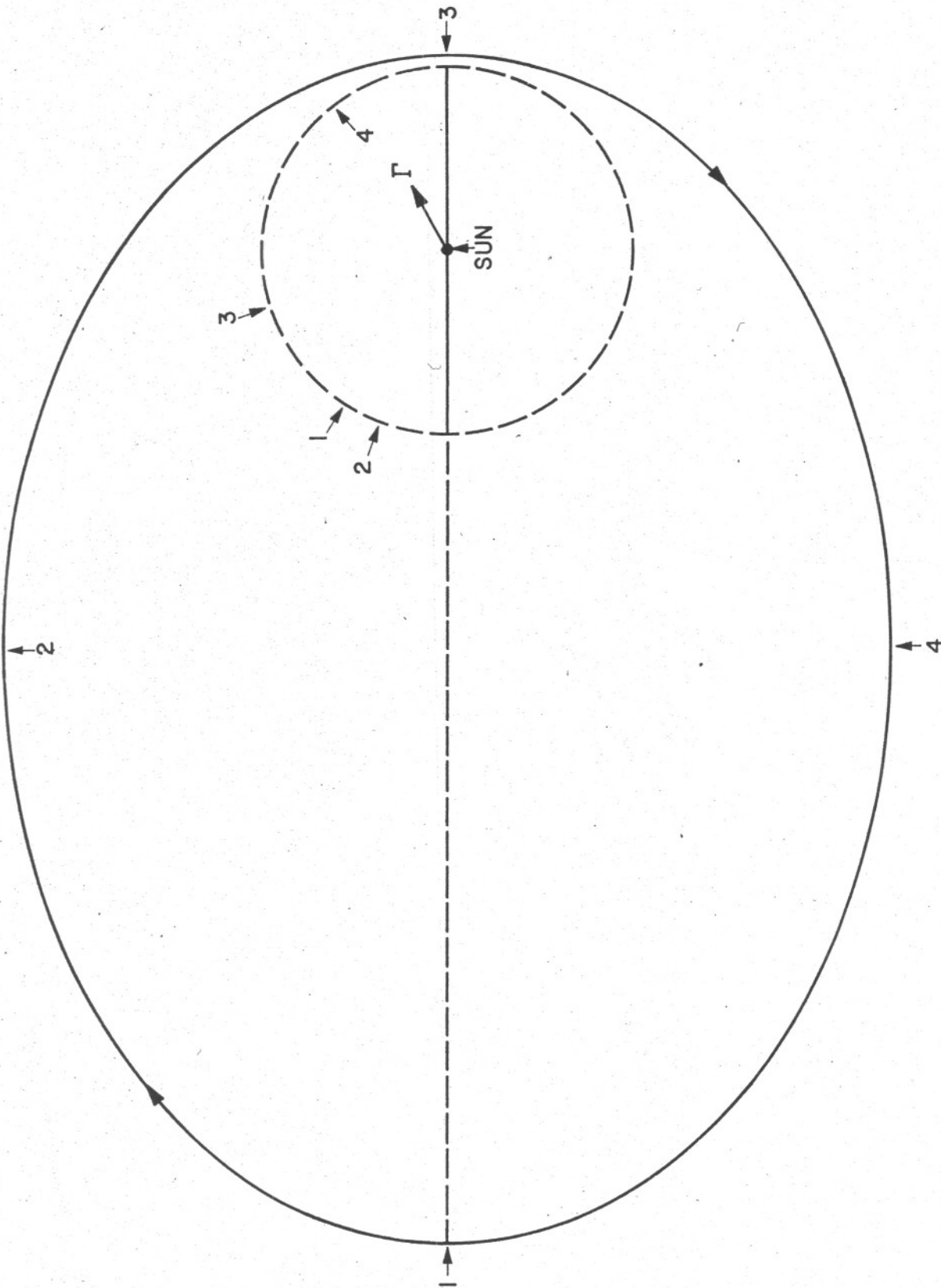


Fig. 64. Earth-Jupiter out-of-ecliptic, October 11, 1978 trajectory