

Grange Observatory

LUNAR OCCULTATIONS FOR YEAR 2020

TABLES LEGEND

Date/Day/Time	the time scale herein used is the Central Europe Time (CET)
A	estimated calculation error in time of event (seconds)
P	phenomenon
D	star disappearance
R	star reappearance
G	graze occultation
SAO	(when present) Smithsonian Astronomical Observatory catalogue star number
Mag	star magnitude in SAO catalogue
Al	star height above horizon (degrees)
Az	azimuth (degrees)
Sn	Sun height above horizon (negative = below horizon, degrees)
K	Moon's illumination (phase in percent)
Name	(when present) classic star designation

Occultations 2020 for Grange Observatory WGS 84 coordinates

Day	Date	Time	A	Mag	P	K	Al	Az	Sn	SAO	Name
	d m y	h m s	s			%	°	°	°		
Fri	03-01-2020	19:01:58	1	7.3	D	55%+	47	181	-20	109783	
Sat	04-01-2020	17:25:25	7	6.8	D	64%+	42	134	-4	110264	
Sat	04-01-2020	21:50:18	2	6.8	D	65%+	43	226	-50	110332	
Mon	06-01-2020	19:16:34	2	6.4	D	82%+	52	133	-22	93524	
Thu	09-01-2020	02:14:16	1	6.4	D	96%+	44	256	-60	77358	
Thu	09-01-2020	17:51:35	1	2.9	D	99%+	18	75	-8	78297	Tejat Posterior, mu Geminorum
Tue	21-01-2020	07:02:45	1	6.3	R	13%-	15	143	-11	185024	
Sat	01-02-2020	18:07:35	1	6.2	D	47%+	54	176	-6	110565	
Sun	02-02-2020	00:33:28	1	6.7	D	49%+	6	279	-62	93034	
Sun	02-02-2020	18:48:57	1	7.5	D	57%+	59	174	-13	93373	
Mon	03-02-2020	18:45:23	2	6.1	D	66%+	59	150	-12	93777	
Wed	05-02-2020	20:25:53	1	6.4	D	85%+	63	143	-29	77858	141 (Tauri)/Orionis
Thu	06-02-2020	03:22:56	1	3.5	D	86%+	20	283	-46	78135	Propus, eta Geminorum
Thu	06-02-2020	03:22:56	1	6.1	D	86%+	20	283	-46		
Thu	06-02-2020	22:38:21	3	6.0	D	92%+	67	184	-50	79042	44 Geminorum
Fri	07-02-2020	22:35:56	2	5.3	D	97%+	64	150	-50	79959	mu Cancri
Sat	08-02-2020	05:13:19	4	5.8	D	98%+	19	280	-27	80112	
Fri	14-02-2020	06:40:01	1	6.5	R	69%-	32	208	-10	139732	94 Virginis
Wed	19-02-2020	05:18:53	2	6.2	R	18%-	2	127	-23	187146	26 Sagittarii
Wed	19-02-2020	06:06:00	1	7.3	R	18%-	8	136	-15	187173	
Wed	26-02-2020	19:40:09	1	7.6	D	8%+	13	256	-16	128965	
Wed	26-02-2020	20:52:04	2	6.6	D	9%+	1	269	-28	128974	
Sat	29-02-2020	21:56:28	1	5.6	D	31%+	21	268	-38	93276	
Tue	03-03-2020	19:23:12	1	7.0	D	60%+	67	181	-12		
Tue	03-03-2020	19:23:17	1	7.0	D	60%+	67	181	-12	77313	
Wed	04-03-2020	20:58:30	1	7.0	D	70%+	66	204	-28	78545	NSV 16929
Thu	05-03-2020	01:18:27	1	6.8	D	72%+	27	276	-50	78696	
Thu	05-03-2020	18:50:30	1	6.6	D	79%+	54	117	-5	79489	
Fri	06-03-2020	00:33:03	1	6.3	D	81%+	45	256	-50	79641	
Fri	06-03-2020	22:53:37	1	6.8	D	89%+	64	202	-44	80354	M 44 star
Thu	12-03-2020	00:56:05	1	5.7	R	92%-	34	146	-48	139428	80 Virginis
Sat	14-03-2020	02:34:11	2	5.8	R	74%-	22	149	-41	159307	34 Librae
Sat	14-03-2020	03:58:39	2	5.5	R	74%-	27	170	-29	159335	zeta Librae
Wed	18-03-2020	06:04:59	5	7.3	R	32%-	15	150	-7	188102	48 Sagittarii
Wed	18-03-2020	06:21:23	2	5.4	R	32%-	16	153	-4	188105	49 Sagittarii
Fri	20-03-2020	05:26:14	1	6.3	R	15%-	2	121	-13	190069	27 Capricorni
Thu	26-03-2020	19:52:50	1	6.4	D	5%+	10	271	-11	110325	
Sun	29-03-2020	19:44:05	1	7.9	D	24%+	42	254	-9	93940	
Sun	29-03-2020	20:40:32	1	3.5	D	24%+	33	265	-18	93954	Ain, epsilon Tauri
Sun	29-03-2020	21:38:60	1	3.5	R	25%+	22	275	-27	93954	Ain, epsilon Tauri
Sun	29-03-2020	22:52:15	1	7.4	D	25%+	11	287	-36	93998	
Mon	30-03-2020	23:54:28	1	4.9	D	35%+	11	291	-40	77184	omicron Tauri
Tue	31-03-2020	22:23:15	2	6.9	D	44%+	35	268	-32	78225	12 Geminorum
Thu	02-04-2020	01:13:57	1	6.2	D	56%+	16	287	-39	79354	58 Geminorum
Fri	03-04-2020	22:59:12	1	7.0	D	76%+	54	233	-35	98468	
Thu	09-04-2020	02:06:29	2	5.5	R	99%-	35	192	-33	139736	95 Virginis
Mon	13-04-2020	02:23:53	1	5.4	R	69%-	11	142	-30	186163	
Mon	13-04-2020	02:55:11	2	5.9	R	69%-	14	149	-27	186204	9 Sagittarii
Mon	13-04-2020	03:40:51	1	6.9	R	69%-	18	159	-21	186247	NGC 6530 star
Tue	14-04-2020	02:28:53	7	5.6	D	59%-	5	133	-29	187599	
Tue	14-04-2020	02:40:31	7	5.6	R	59%-	6	135	-28	187599	
Tue	28-04-2020	00:00:16	1	5.8	D	21%+	0	304	-30	78050	3 Geminorum, PU Geminorum
Tue	28-04-2020	21:41:11	1	7.2	D	29%+	31	273	-19	78963	
Wed	29-04-2020	20:47:45	1	7.6	D	39%+	48	252	-12	79810	
Thu	30-04-2020	00:21:44	1	6.8	D	40%+	12	289	-30	79903	7 Cancri
Sat	02-05-2020	23:21:32	1	6.8	D	73%+	42	239	-27	99321	

Day	Date	Time	A	Mag	P	K	Al	Az	Sn	SAO	Name
	d m y	h m s	s			%	°	°	°		
Sun	03-05-2020	22:41:06	1	4.0	D	82%+	48	207	-24	119035	nu Virginis
Tue	05-05-2020	22:04:17	2	5.7	D	96%+	37	159	-20	139428	80 Virginis
Thu	07-05-2020	01:08:25	1	6.2	D	100%+	31	197	-27	158677	
Thu	07-05-2020	23:14:19	1	5.8	R	100%-	24	153	-26	159307	34 Librae
Fri	08-05-2020	00:29:56	1	5.5	R	100%-	28	172	-28	159335	zeta Librae
Mon	25-05-2020	20:53:48	1	7.2	D	9%+	18	286	-8	78707	
Mon	25-05-2020	21:08:35	1	6.5	D	9%+	15	288	-10	78717	
Mon	25-05-2020	22:25:29	1	6.8	D	10%+	4	300	-18	78771	
Tue	26-05-2020	21:57:18	2	7.5	D	17%+	16	287	-15	79663	
Wed	27-05-2020	23:36:24	1	7.1	D	26%+	8	292	-22	80412	
Sat	30-05-2020	21:01:17	1	6.7	D	58%+	48	217	-8	118859	
Wed	10-06-2020	03:51:14	1	5.3	R	79%-	23	171	-8	190050	chi Capricorni
Thu	11-06-2020	04:32:11	3	6.3	R	70%-	26	169	-2	164827	
Fri	12-06-2020	02:50:09	1	5.7	R	61%-	17	132	-15	165298	69 Aquarii
Fri	12-06-2020	04:29:03	2	4.1	R	61%-	28	155	-3	165321	tau Aquarii
Wed	17-06-2020	03:10:04	1	6.2	R	17%-	5	82	-13	110565	
Fri	19-06-2020	08:49:54	3	-3.8	D	4%-	52	124	+40		Venus
Fri	19-06-2020	09:26:46	3	-3.8	R	4%-	57	137	+47		Venus
Tue	23-06-2020	22:06:06	2	6.9	D	7%+	3	298	-14	80201	
Mon	29-06-2020	23:39:03	1	6.6	D	68%+	17	239	-21	139618	
Sat	04-07-2020	23:28:39	1	5.8	D	100%+	19	167	-20	187216	
Wed	08-07-2020	01:40:10	1	4.5	R	91%-	23	159	-21	164520	epsilon Capricorni
Thu	16-07-2020	03:42:14	1	7.2	R	21%-	22	88	-11	93615	
Tue	28-07-2020	22:23:05	1	5.6	D	65%+	17	223	-19	159280	32 Librae
Fri	31-07-2020	21:37:11	1	6.2	D	91%+	19	171	-15	186699	V4028 Sagittarii
Sun	02-08-2020	00:35:59	2	5.0	D	97%+	18	200	-27	188101	chi Sagittarii
Tue	04-08-2020	00:23:21	1	5.2	R	100%-	24	172	-28	190173	phi Capricorni
Tue	11-08-2020	00:19:56	1	6.7	R	57%-	13	87	-30	93034	
Thu	13-08-2020	03:24:04	2	6.1	R	36%-	34	97	-19	93874	
Sat	15-08-2020	04:26:18	1	5.8	R	18%-	30	86	-11	78050	3 Geminorum, PU Geminorum
Mon	17-08-2020	04:04:57	3	6.0	R	5%-	8	65	-15	79940	9 Cancri, BL Cancri
Mon	17-08-2020	04:28:42	1	7.2	R	5%-	11	69	-11	79948	
Sat	22-08-2020	21:17:57	1	5.9	D	19%+	2	261	-18	139308	65 Virginis
Tue	25-08-2020	19:27:23	1	4.8	D	50%+	23	197	-2	159683	
Tue	25-08-2020	19:27:37	1	2.6	D	50%+	23	197	-2	159682	Graffias, beta 1 Scorpii
Tue	25-08-2020	20:39:20	1	2.6	R	51%+	18	214	-14	159682	Graffias, beta 1 Scorpii
Fri	28-08-2020	20:46:58	8	5.6	D	81%+	20	176	-16	187599	
Thu	03-09-2020	01:39:37	3	6.2	R	99%-	35	189	-35	146729	
Thu	03-09-2020	22:38:35	1	5.8	R	97%-	24	126	-32	128621	NSV 15038
Mon	07-09-2020	00:26:46	1	6.9	R	80%-	34	113	-39	110516	
Mon	07-09-2020	02:37:50	2	6.4	R	80%-	52	149	-31	110537	25 (Arietis)/Ceti
Wed	09-09-2020	02:17:47	2	5.9	R	63%-	44	110	-34	93721	
Thu	10-09-2020	05:26:28	3	7.3	R	52%-	65	155	-7	76850	
Fri	11-09-2020	01:08:59	1	6.3	R	44%-	19	76	-40	77420	
Fri	11-09-2020	03:45:44	2	7.6	R	43%-	45	103	-24	77559	
Sat	12-09-2020	01:23:20	1	6.8	R	33%-	13	69	-39	78568	
Sat	12-09-2020	02:19:53	1	7.4	R	33%-	22	78	-35	78610	
Sun	13-09-2020	04:00:18	2	7.7	R	23%-	30	85	-22	79618	
Sun	13-09-2020	05:33:08	1	7.4	R	22%-	45	103	-7	79657	
Mon	14-09-2020	05:16:20	1	4.7	R	14%-	32	91	-10	80378	Asellus Borealis, gamma Cancri
Sun	20-09-2020	19:11:23	2	6.6	D	15%+	11	236	-8		
Sun	20-09-2020	19:11:27	2	5.3	D	15%+	11	236	-8	158821	mu Librae
Sun	27-09-2020	22:22:37	1	4.5	D	85%+	25	191	-40	164520	epsilon Capricorni
Mon	28-09-2020	01:58:02	1	4.7	D	86%+	5	238	-42	164593	kappa Capricorni
Wed	30-09-2020	00:04:17	3	6.1	D	96%+	33	196	-48	165578	
Thu	01-10-2020	00:58:39	2	4.4	D	99%+	37	200	-47	147042	30 Piscium, YY Piscium
Sun	04-10-2020	00:26:11	1	5.6	R	96%-	49	147	-49	110390	64 Ceti
Sun	04-10-2020	01:49:28	1	4.4	R	96%-	54	179	-45	110408	xi 1 Ceti
Mon	05-10-2020	22:00:07	1	6.2	R	86%-	20	86	-40	93536	

Day	Date	Time	A	Mag	P	K	Al	Az	Sn	SAO	Name
	d m y	h m s	s			%	°	°	°		
Wed	07-10-2020	04:12:23	2	5.8	R	77%-	66	184	-26	76680	HU Tauri
Wed	07-10-2020	22:00:30	1	5.0	R	70%-	8	67	-41	77097	109 Tauri
Thu	08-10-2020	02:49:27	1	7.2	R	69%-	56	121	-39	77191	
Thu	08-10-2020	23:37:25	2	6.1	R	60%-	17	73	-50	78168	8 Geminorum
Fri	09-10-2020	00:00:26	1	6.2	R	60%-	21	76	-51	78176	9 Geminorum
Fri	09-10-2020	23:46:45	3	5.8	R	50%-	10	66	-51	79162	48 Geminorum
Thu	15-10-2020	06:01:32	1	7.4	R	4%-	13	97	-9	119227	
Tue	20-10-2020	18:55:54	1	6.2	D	21%+	10	220	-15	185374	
Tue	20-10-2020	19:31:17	1	4.2	D	21%+	6	227	-21	185401	44 Ophiuchi
Wed	21-10-2020	19:34:04	1	2.8	D	31%+	11	215	-22	186841	Kaus Borealis, lambda Sagittarii
Wed	21-10-2020	20:28:36	2	6.6	D	31%+	5	226	-31	186873	V4031 Sagittarii
Sun	01-11-2020	00:48:49	4	5.2	D	100%-	57	186	-59	93083	38 Arietis, UV Arietis
Sun	01-11-2020	01:22:12	4	5.2	R	100%-	56	201	-56	93083	38 Arietis, UV Arietis
Tue	03-11-2020	20:22:30	1	4.6	R	91%-	12	71	-33	76920	iota Tauri
Thu	05-11-2020	05:16:50	2	5.8	R	82%-	62	230	-21	78079	5 Geminorum
Thu	05-11-2020	22:40:23	1	6.8	R	76%-	20	75	-55	78855	
Fri	06-11-2020	02:20:53	2	5.2	R	75%-	56	117	-51	78999	omega Geminorum
Sat	07-11-2020	01:21:45	1	6.8	R	66%-	37	93	-58	79805	
Sat	07-11-2020	04:06:04	2	6.4	R	65%-	63	136	-34	79864	
Tue	10-11-2020	04:08:05	1	6.9	R	33%-	31	104	-34	99280	
Wed	11-11-2020	06:46:52	2	7.1	R	22%-	43	134	-7	119030	
Sat	21-11-2020	17:51:33	2	6.2	D	45%+	26	173	-10	164697	
Sun	22-11-2020	23:22:20	1	4.1	D	57%+	9	241	-63	165321	tau Aquarii
Thu	26-11-2020	00:15:24	1	6.1	D	83%+	31	236	-66	109643	26 Ceti
Thu	26-11-2020	19:54:38	3	4.4	D	89%+	43	139	-31	110065	nu Piscium
Fri	27-11-2020	20:24:37	1	6.4	D	94%+	46	132	-37	110537	25 (Arietis)/Ceti
Sun	29-11-2020	20:09:35	2	5.9	D	100%+	36	100	-34	93721	
Thu	03-12-2020	23:21:05	4	6.2	R	88%-	38	93	-64	79580	
Sun	06-12-2020	23:17:17	1	6.2	R	61%-	5	74	-64	99080	42 Leonis
Mon	07-12-2020	05:01:34	1	5.4	R	59%-	57	154	-30	99172	46 Leonis, ES Leonis
Tue	08-12-2020	06:07:30	2	6.7	R	48%-	52	163	-19	118859	
Wed	09-12-2020	02:13:44	1	6.9	R	38%-	10	95	-58	119262	
Thu	10-12-2020	04:50:37	1	7.8	R	26%-	23	120	-32	139174	HY Virginis
Fri	11-12-2020	05:53:33	4	6.7	R	16%-	19	126	-21	139713	
Fri	11-12-2020	07:22:41	1	5.5	R	16%-	30	147	-7	139736	95 Virginis
Sun	13-12-2020	07:44:09	1	2.6	D	3%-	10	132	-4	159682	Graffias, beta 1 Scorpii
Fri	18-12-2020	20:08:49		5.7	G	20%+	6	235	-34	190461	37 Capricorni
Mon	21-12-2020	21:01:12	1	4.4	D	48%+	29	224	-43	147042	30 Piscium, YY Piscium
Mon	21-12-2020	23:22:08	2	4.6	D	49%+	9	253	-64	128572	33 Piscium, BC Piscium
Wed	23-12-2020	00:02:58	1	6.6	D	59%+	13	257	-68	128974	
Wed	23-12-2020	18:42:01	2	6.6	D	66%+	46	156	-18	109895	
Thu	24-12-2020	19:12:58	1	5.6	D	75%+	50	150	-23	110390	64 Ceti
Thu	24-12-2020	20:36:43	1	4.4	D	75%+	54	183	-38	110408	xi 1 Ceti
Sun	27-12-2020	22:50:16		5.8	D	95%+	66	184	-60	76680	HU Tauri
Sun	27-12-2020	23:01:18		5.8	R	95%+	65	190	-61	76680	HU Tauri