

# Kuun synodisen kuukauden vaihtelusta

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Aurinkokuntatapaaminen 2023

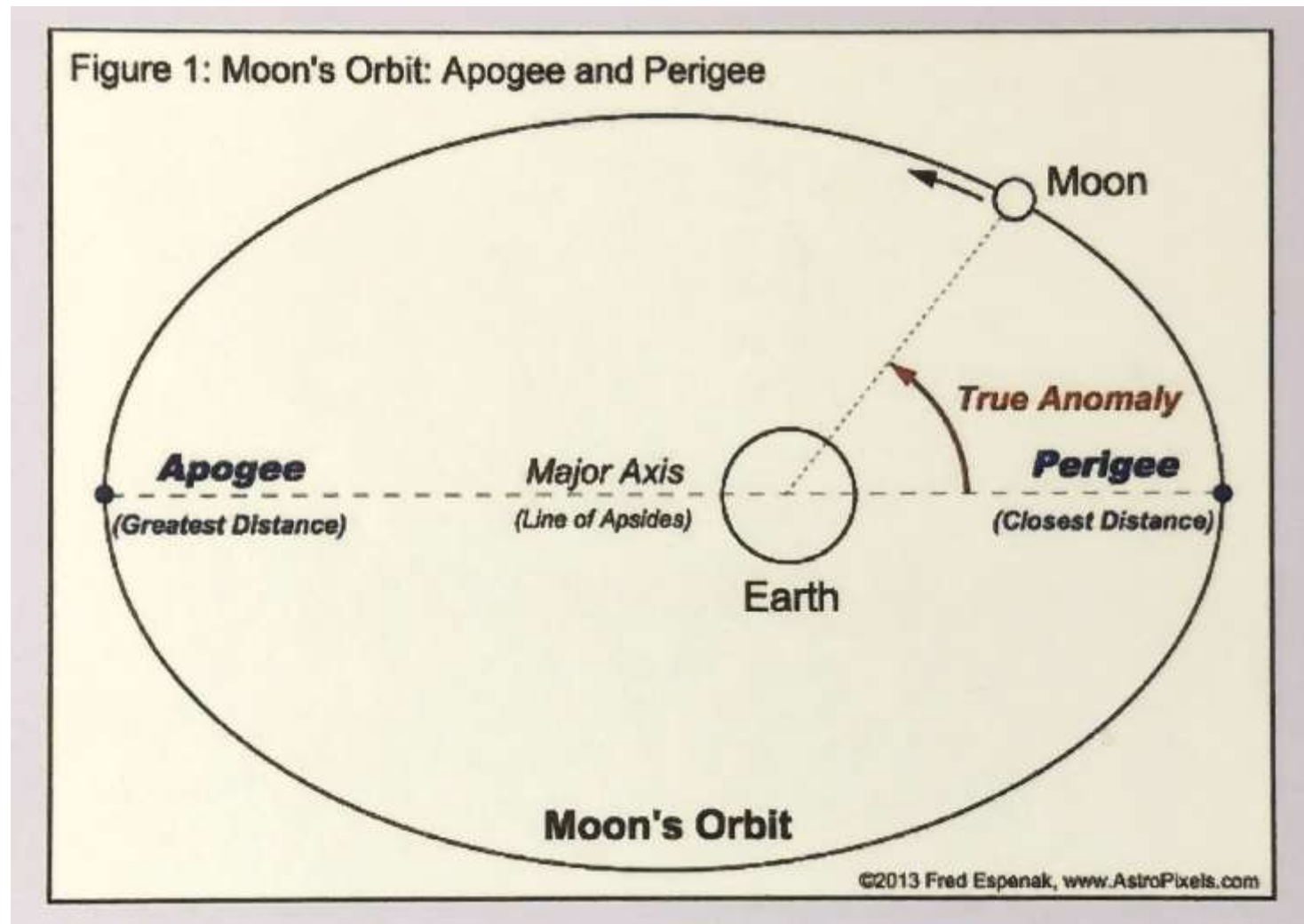
# Ernest William Brown



# Synodisen kuukauden pituudet 2001

Length of Synodic Month in 2001			
Date of New Moon (GMT)	Length of Lunation	Difference From Mean Lunation	Moon's True Anomaly
2001 Jan 24 13:07	29d 19h 14m	+06h 30m	177.9°
2001 Feb 23 08:21	29d 17h 00m	+04h 16m	202.8°
2001 Mar 25 01:21	29d 14h 05m	+01h 21m	232.3°
2001 Apr 23 15:26	29d 11h 20m	-01h 24m	267.3°
2001 May 23 02:46	29d 09h 12m	-03h 32m	299.7°
2001 Jun 21 11:58	29d 07h 47m	-04h 57m	324.1°
2001 Jul 20 19:44	29d 07h 11m	-05h 33m	342.5°
2001 Aug 19 02:55	29d 07h 32m	-05h 12m	358.1°
2001 Sep 17 10:27	29d 08h 56m	-03h 48m	13.2°
2001 Oct 16 19:23	29d 11h 17m	-01h 27m	30.5°
2001 Nov 15 06:40	29d 14h 07m	+01h 23m	53.5°
2001 Dec 14 20:47	29d 16h 41m	+03h 57m	86.2°

# Luonnollinen anomalia (True anomaly)

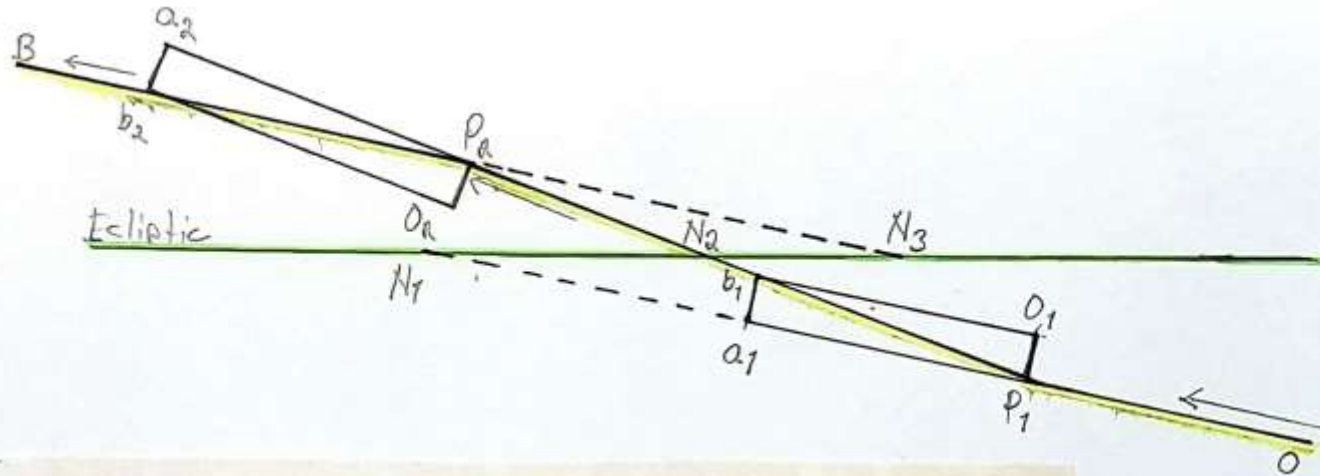


# Synodiset kuukaudet 2022–2023

2022	Jan	02	18:33	29d 11h13m	-01h32m	13.9°	
2022	Feb	01	05:46	29d 11h49m	-00h55m	32.0°	
2022	Mar	02	17:35	29d 12h50m	+00h06m	56.3°	
2022	Apr	01	06:24	29d 14h04m	+01h20m	89.8°	
2022	Apr	30	20:28	29d 15h02m	+02h18m	126.0°	
2022	May	30	11:30	29d 15h22m	+02h38m	155.2°	longest
2022	Jun	29	02:52	29d 15h03m	+02h19m	178.8°	
2022	Jul	28	17:55	29d 14h22m	+01h38m	202.0°	
2022	Aug	27	08:17	29d 13h37m	+00h53m	230.2°	
2022	Sep	25	21:55	29d 12h54m	+00h10m	265.5°	
2022	Oct	25	10:49	29d 12h09m	-00h36m	299.9°	
2022	Nov	23	22:57	29d 11h20m	-01h24m	325.5°	
2022	Dec	23	10:17	29d 10h36m	-02h08m	344.3°	shortest
2023	Jan	21	20:53	29d 10h13m	-02h31m	360.0°	shortest
2023	Feb	20	07:06	29d 10h17m	-02h27m	15.6°	
2023	Mar	21	17:23	29d 10h49m	-01h55m	34.1°	
2023	Apr	20	04:12	29d 11h41m	-01h03m	59.2°	
2023	May	19	15:53	29d 12h44m	-00h00m	92.6°	
2023	Jun	18	04:37	29d 13h55m	+01h11m	127.4°	
2023	Jul	17	18:32	29d 15h06m	+02h22m	155.7°	
2023	Aug	16	09:38	29d 16h02m	+03h18m	179.2°	
2023	Sep	15	01:40	29d 16h15m	+03h31m	202.9°	longest
2023	Oct	14	17:55	29d 15h32m	+02h48m	232.5°	
2023	Nov	13	09:27	29d 14h05m	+01h21m	269.5°	
2023	Dec	12	23:32	29d 12h25m	-00h19m	303.6°	



# Radan solmujen liike



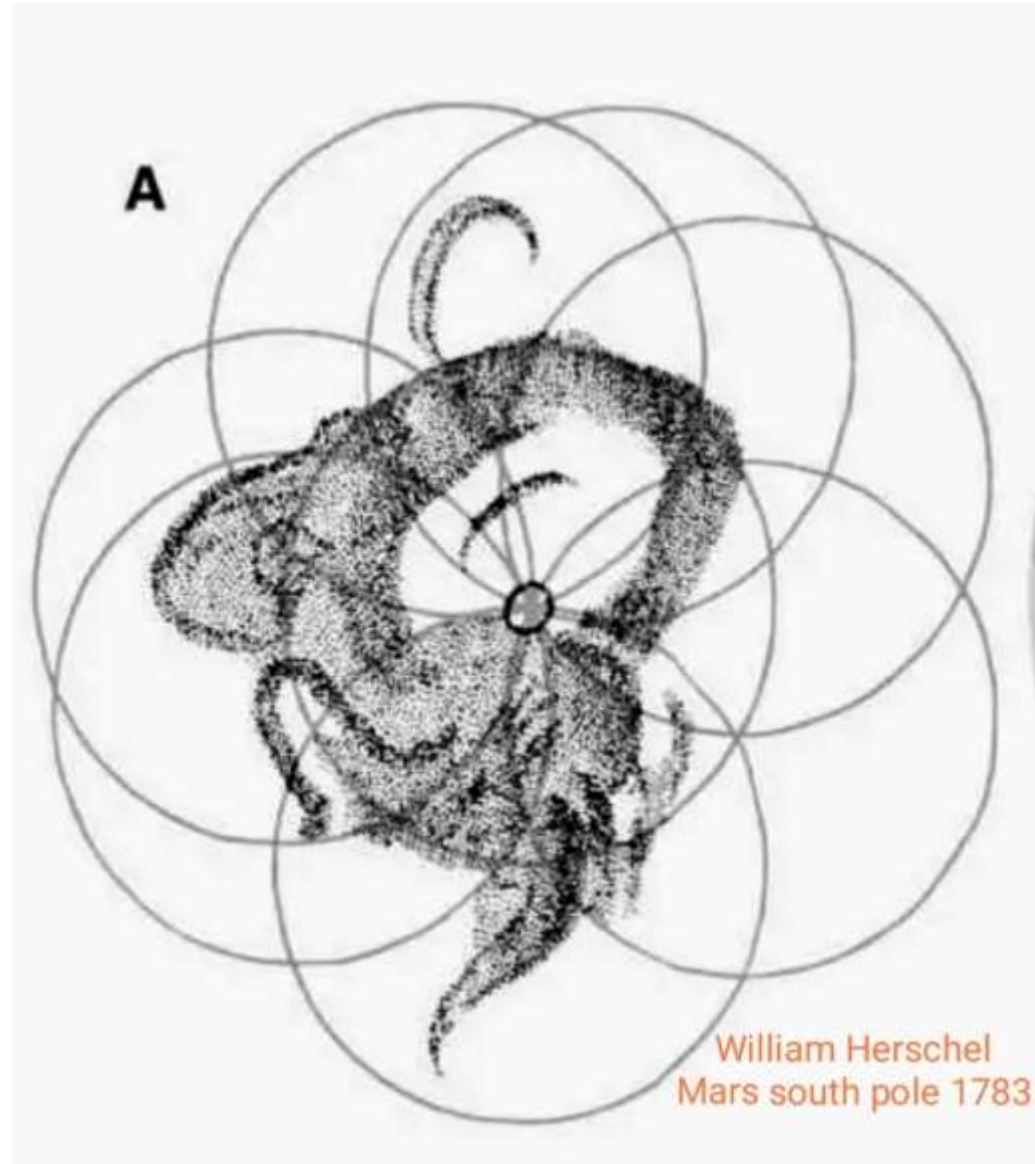
As the Sun's orthogonal disturbing force diminishes when the Sun is at a node, the weakening force allows a gradual increase in the inclination of the Moon's orbit from  $P_1$  toward  $O_1$ , which causes the Moon to pass through  $b_1$  instead of  $a_1$  and to cross the ecliptic at  $N_2$  instead of  $N_1$ . As the force increases after the Moon passes through  $N_2$ , the inclination again shifts toward  $O_2$  and the Moon passes through  $b_2$  instead of  $a_2$ . The node has receded from point  $N_1$  to point  $N_3$ . The Moon's path is the line formed by  $O, P_1, b_1, N_2, P_2, b_2$ , and  $B$ .

Charles Young's diagram of the regression of the Moon's nodes when the Sun and Moon are at a node

# Kazan heliometer



# Herschelin piirros Marsin pohjoisnavasta





# Sinus Viscositatis

