

Planetary transit through history

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Transit of a planet: What is it?



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Kind of special eclipse



Transit of Mercury (1973)



Transit of Venus (2004)



Transit of a planet: Occurrences

Transits of Mercury: 1901-2050

Date	Universal Time	Separation* (Sun and Mercury)
1907 Nov 14	12:06	759"
1914 Nov 07	12:02	631"
1924 May 08	01:41	85"
1927 Nov 10	05:44	129"
1937 May 11	09:00	955"
1940 Nov 11	23:20	368"
1953 Nov 14	16:54	862"
1957 May 06	01:14	907"
1960 Nov 07	16:53	528"
1970 May 09	08:16	114"
1973 Nov 10	10:32	26"
1986 Nov 13	04:07	471"
1993 Nov 06	03:57	927"
1999 Nov 15	21:41	963"
2003 May 07	07:52	708"
2006 Nov 08	21:41	423"
2016 May 09	14:57	319"
2019 Nov 11	15:20	76"
2032 Nov 13	08:54	572"
2039 Nov 07	08:46	822"
2049 May 07	14:24	512"

(graze)

Transits of Venus: 1601-2400

Date	Universal Time	Separation (Sun and Venus)
1631 Dec 07	05:19	940"
1639 Dec 04	18:25	522"
1761 Jun 06	05:19	573"
1769 Jun 03	22:25	608"
1874 Dec 09	04:05	832"
1882 Dec 06	17:06	634"
2004 Jun 08	08:19	627"
2012 Jun 06	01:28	553"
2117 Dec 11	02:48	724"
2125 Dec 08	16:01	733"
2247 Jun 11	11:30	693"
2255 Jun 09	04:36	492"
2360 Dec 13	01:40	628"
2368 Dec 10	14:43	835"

13 transits of Mercury each century

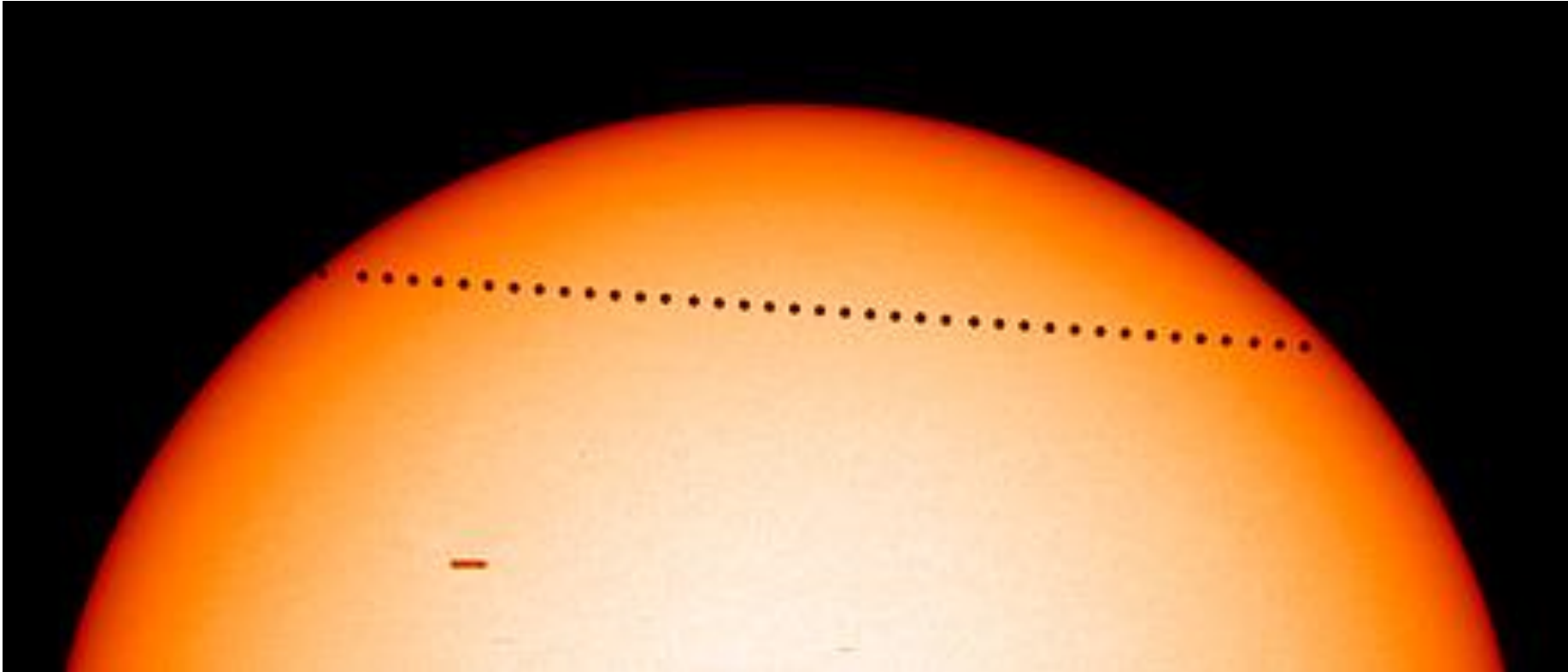
Transits of Venus occur in pairs (eight years separate two events)

Transit of Mercury: 09/05/16



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Innermost planet





First observations of transits

Kepler (1627):

- Detailed predictions of future positions of planets

Gassendi (1631):

- First observation of transit of Mercury

Horrocks and Crabtree (1639):

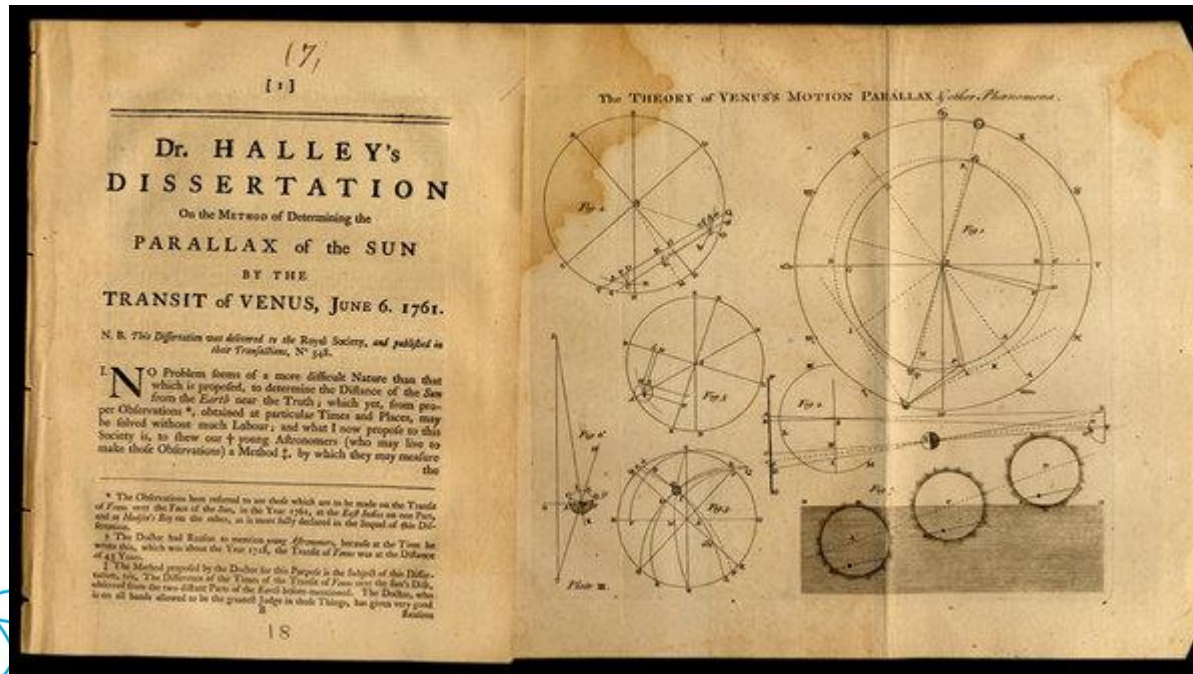
- First observation of transit of Mercury



Earth – Sun distance: Measurements

Halley (1677):

- Careful timing of transits used to determine Earth – Sun distance

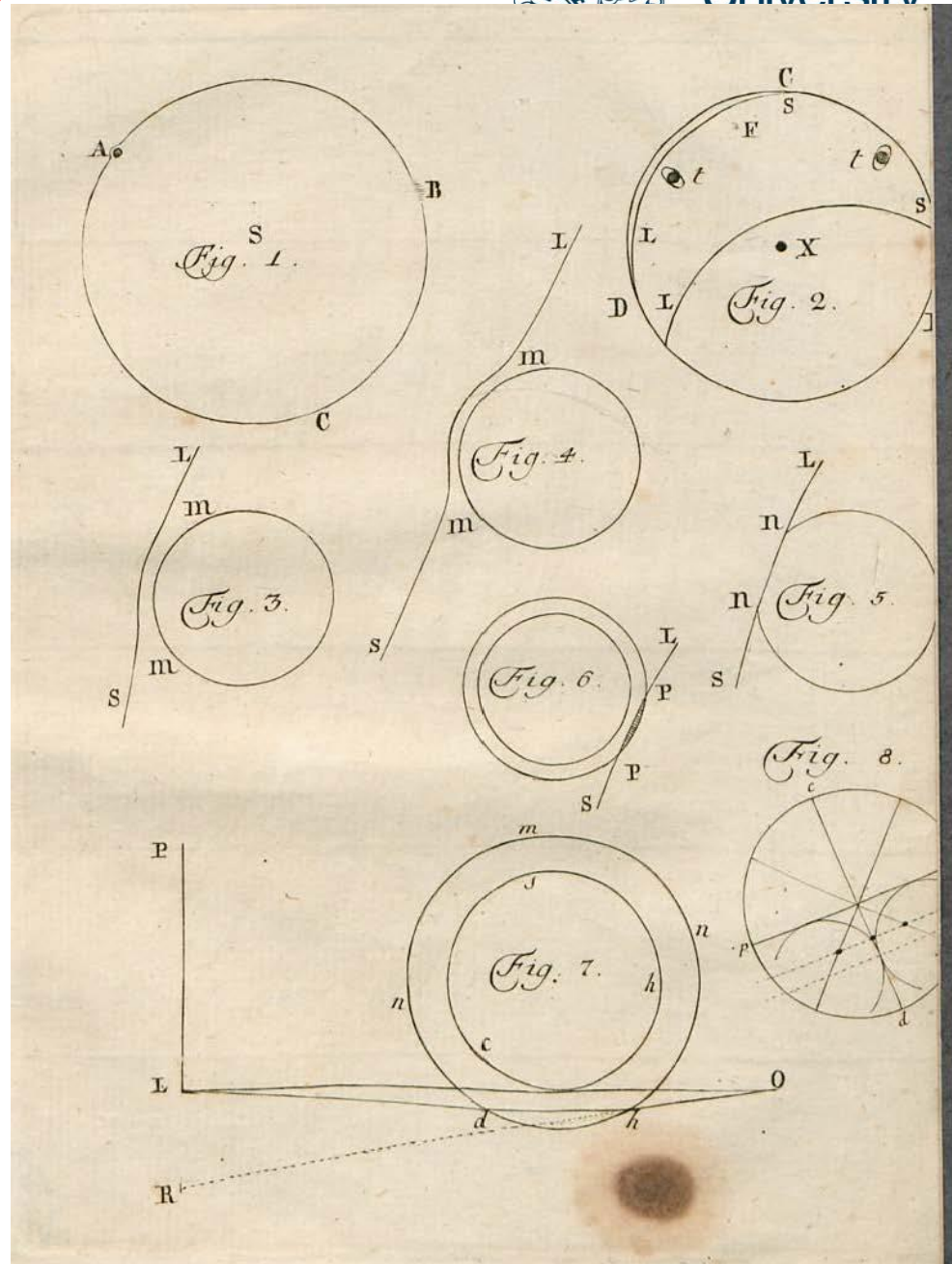


Venus' atmosphere

Lomonosov (1761):

- Bulge of light ("Lomonosov's arc") around Venus as Venus began to exit the Sun

Confirmed in 2012

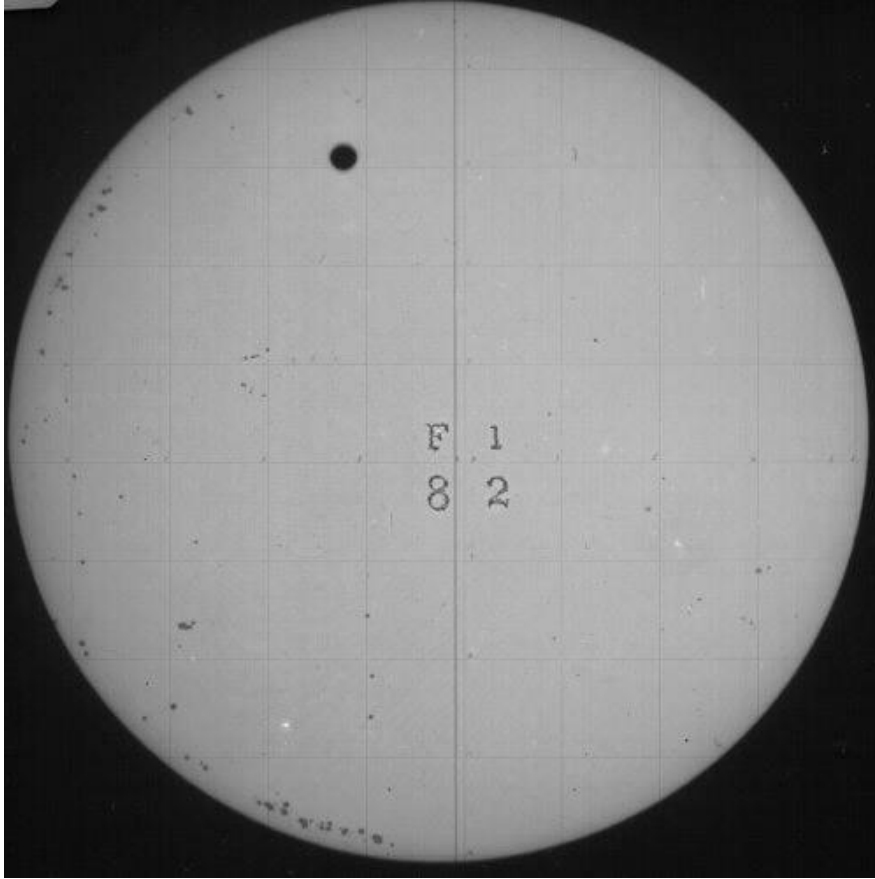


First picture of transit of Venus



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1882:



Last transit of Venus of our lifetime: 2012



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