* NOVA *

N. 1244 - 11 DICEMBRE 2017

ASSOCIAZIONE ASTROFILI SEGUSINI

GEMINIDI 2017 E PASSAGGIO DI 3200 PHAETHON

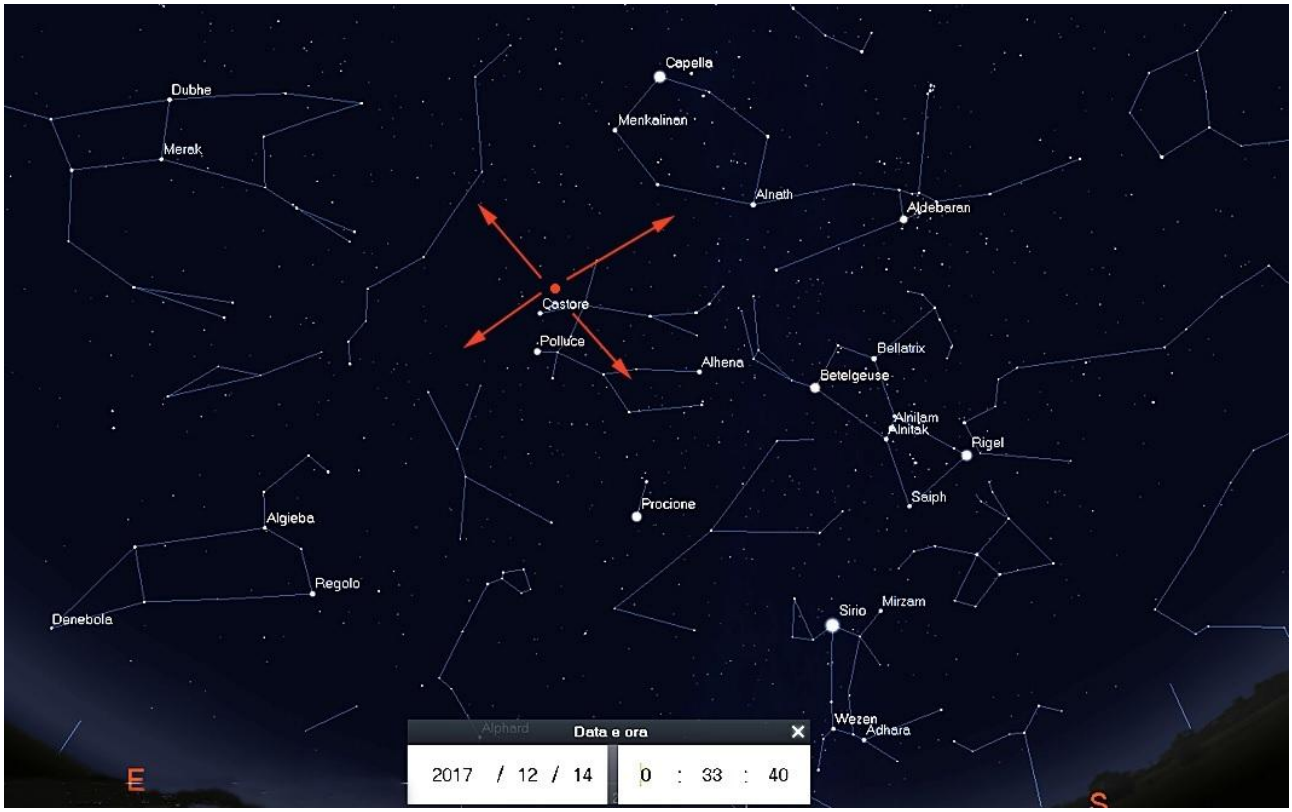
Nella notte tra il 13 e 14 dicembre è atteso il massimo delle Geminidi, uno sciame meteorico fra i più belli e spettacolari, che quest'anno si presenta nelle migliori condizioni di osservabilità senza disturbo lunare: una sottile falce di Luna (15%) sarà visibile verso le 4 del mattino nella costellazione della Bilancia ai confini con la Vergine.

A causa del periodo freddo in cui si verifica, questo sciame è praticamente sconosciuto alla maggior parte della popolazione, ed è un vero peccato perché sovente offre uno spettacolo superiore alle più famose Perseidi estive.

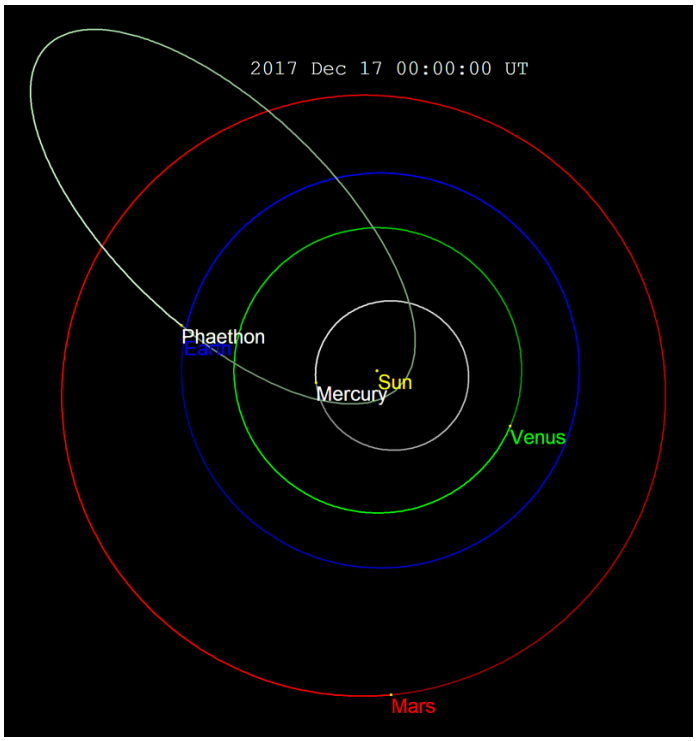
Le Geminidi sono generate da 3200 Phaethon, un asteroide di circa 5 km di diametro con periodo orbitale di 1,4 anni che fa parte della famiglia degli Apollo, una categoria di asteroidi potenzialmente pericolosi per la Terra perché incrociano la nostra orbita. 3200 Phaethon ha un'orbita molto eccentrica che lo porta ad attraversare le orbite di Marte, Terra, Venere spingendosi ben oltre Mercurio; la forma dell'orbita ricorda quella delle comete e forse potrebbe essere una cometa estinta.

Quest'anno la Terra avrà un'incontro ravvicinato con quest'oggetto che il 16 dicembre, due giorni dopo il picco di massima attività delle Geminidi, passerà a circa 10 milioni di km dal nostro pianeta (v. effemeridi nelle pagine seguenti).

g.z.



Radiante delle Geminidi il 14 dicembre 2017
(da *Stellarium*, www.stellarium.org)



L'orbita ellittica di 3200 Phaethon incontra le orbite di Marte, Terra, Venere e Mercurio (da https://en.wikipedia.org/wiki/3200_Phaethon).

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*******************************************************************************
Ephemeris / WWW_USER Fri Dec  8 01:35:31 2017 Pasadena, USA      / Horizons
*******************************************************************************
Target body name: 3200 Phaethon (1983 TB)          {source: JPL#603}
Center body name: Earth (399)                      {source: DE431}
Center-site name: Grange Observatory, Bussoleno
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Start time      : A.D. 2017-Dec-12 20:00:00.0000 UT
Stop  time      : A.D. 2017-Dec-20 20:00:00.0000 UT
Step-size       : 1440 minutes
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 Date__(UT)__HR:MN     R.A._(ICRF/J2000.0)_DEC Azi_(a-appr)_Elev  APmag  S-brt            delta      deldot
*******************************************************************************************************************

 2017-Dec-12 20:00     04 15 32.77 +45 27 33.9  76.4238  65.3337  10.93   4.80 0.10271500206451 -23.9732299
 2017-Dec-13 20:00     03 30 42.19 +44 40 14.5  83.1834  73.6584  10.77   4.91 0.08982809061107 -20.6631269
 2017-Dec-14 20:00     02 35 41.94 +42 04 41.2 113.2241  83.2343  10.71   5.07 0.07924050942442 -15.8341827
 2017-Dec-15 20:00     01 34 43.14 +36 46 03.4 218.2710  79.8232  10.79   5.27 0.07193751131794  -9.1414658
 2017-Dec-16 20:00     00 35 36.86 +28 37 13.1 236.7624  65.1304  11.07   5.50 0.06893699135949  -0.9316257
 2017-Dec-17 20:00     23 44 57.25 +18 57 14.0 242.1552  49.6137  11.56   5.74 0.07076097546871   7.4361032
 2017-Dec-18 20:00     23 04 45.02 +09 40 18.8 244.9236  35.6085  12.21   5.98 0.07704844436907  14.4642631
 2017-Dec-19 20:00     22 33 48.18 +01 54 51.7 246.7496  24.0808  12.93   6.21 0.08682409565643  19.5974111
 2017-Dec-20 20:00     22 10 00.13 -04 08 26.3 248.1351  14.9696  13.64   6.42 0.09905690781734  23.1031252

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Column meaning:

TIME
  Prior to 1962, times are UT1. Dates thereafter are UTC. Any 'b' symbol in the 1st-
column denotes a B.C. date. First-column blank (" ") denotes an A.D. date. Calendar dates
prior to 1582-Oct-15 are in the Julian calendar system.
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Later calendar dates are in the Gregorian system.

Time tags refer to the same instant throughout the solar system, regardless of where the observer is located. For example, if an observation from the surface of another body has an output time-tag of 12:31:00 UTC, an Earth-based time-scale, it refers to the instant on that body simultaneous to 12:31:00 UTC on Earth.

The Barycentric Dynamical Time scale (TDB) is used internally as defined by the planetary equations of motion. Conversion between TDB and the selected non-uniform UT output time-scale has not been determined for UTC times after the next July or January 1st. The last known leap-second is used as a constant over future intervals.

NOTE: "n.a." in output means quantity "not available" at the print-time.

SOLAR PRESENCE (OBSERVING SITE)

Time tag is followed by a blank, then a solar-presence symbol:

'*' Daylight (refracted solar upper-limb on or above apparent horizon)
'C' Civil twilight/dawn
'N' Nautical twilight/dawn
'A' Astronomical twilight/dawn
' ' Night OR geocentric ephemeris

LUNAR PRESENCE (OBSERVING SITE)

The solar-presence symbol is immediately followed by a lunar-presence symbol:

'm' Refracted upper-limb of Moon on or above apparent horizon
' ' Refracted upper-limb of Moon below apparent horizon OR geocentric ephemeris

R.A._(ICRF/J2000.0)_DEC =

J2000.0 astrometric right ascension and declination of target center. Adjusted for light-time. Units: HMS (HH MM SS.ff) and DMS (DD MM SS.f)

Azi_(a-appr)_Elev =

Airless apparent azimuth and elevation of target center. Adjusted for light-time, the gravitational deflection of light, stellar aberration, precession and nutation. Azimuth measured North(0) -> East(90) -> South(180) -> West(270) -> North (360). Elevation is with respect to plane perpendicular to local zenith direction. TOPOCENTRIC ONLY.

Units: DEGREES

APmag S-brt =

Asteroid's approximate apparent visual magnitude & surface brightness:

APmag = H + 5*log10(delta) + 5*log10(r) - 2.5*log10((1-G)*phi1 + G*phi2)

For solar phase angles >90 deg, the error could exceed 1 magnitude. For phase angles >120 degrees, output values are rounded to the nearest integer to indicate the errors could be large and unknown.

Units: NONE & VISUAL MAGNITUDES PER SQUARE ARCSECOND

delta deldot =

Range ("delta") and range-rate ("delta-dot") of target center with respect to the observer at the instant light seen by the observer at print-time would have left the target center (print-time minus down-leg light-time); the distance traveled by a light ray emanating from the center of the target and recorded by the observer at print-time. "deldot" is a projection of the velocity vector along this ray, the light-time-corrected line-of-sight from the coordinate center, and indicates relative motion. A positive "deldot" means the target center is moving away from the observer (coordinate center). A negative "deldot" means the target center is moving toward the observer.

Units: AU and KM/S

Computations by ...

Solar System Dynamics Group, Horizons On-Line Ephemeris System
4800 Oak Grove Drive, Jet Propulsion Laboratory - Pasadena, CA 91109 USA
Information: http://ssd.jpl.nasa.gov/
Connect : telnet://ssd.jpl.nasa.gov:6775 (via browser)
telnet ssd.jpl.nasa.gov 6775 (via command-line)
Author : Jon.D.Giorgini@jpl.nasa.gov

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