

*** NOVA ***

N. 1455 - 14 GENNAIO 2019

ASSOCIAZIONE ASTROFILI SEGUSINI

ASTEROIDE (433) EROS

Riportiamo la notizia del massimo avvicinamento dell'asteroide NEO, classe Amor, (433) Eros in data odierna, prevista da NASA JPL per le ore 22:21:30 CET al caposaldo AAS, MPC 476 Grange Obs. Bussoleno. La distanza minima dalla Terra nel passaggio di questo asteroide, potenzialmente pericoloso per impatto, è di 0.208576 U.A. (circa 31 milioni di km).

Consigliamo di cercarlo in prima serata, alto sull'orizzonte, con un piccolo telescopio (si vedano le effemeridi, pp. 2-3) trovandosi attualmente di nona magnitudine, e di undicesima a fine marzo.

Ricordiamo che l'Osservatorio contribuì nel 1995-1996 alla missione della sonda Shoemaker-NEAR del JPL, che orbitò ed infine atterrò sull'asteroide nel 2001, aggiornandone i parametri orbitali insieme alle misure da altri osservatori certificati dal Minor Planet Center (tutte riportate nel suo link).



L'asteroide NEO (433) Eros ripreso dalla sonda Shoemaker NEAR (Crediti; NASA)

Links:

https://en.wikipedia.org/wiki/NEAR_Shoemaker

http://www.minorplanetcenter.net/db_search/show_object?utf8=%E2%9C%93&object_id=eros

<http://grangeobs.net/feb2001.html>

NEWSLETTER TELEMATICA APERIODICA DELL'A.A.S. PER SOCI E SIMPATIZZANTI - ANNO XIV

La Nova è pubblicazione telematica aperiodica dell'A.A.S. - Associazione Astrofili Segusini di Susa (TO) riservata a Soci e Simpatizzanti.

È pubblicata senza alcuna periodicità regolare (v. Legge 7 marzo 2001, n. 62, art. 1, comma 3) e pertanto non è sottoposta agli obblighi previsti dalla Legge 8 febbraio 1948, n. 47, art. 5. I dati personali utilizzati per l'invio telematico della Nova sono trattati dall'AAS secondo i principi del *Regolamento generale sulla protezione dei dati* (GDPR - Regolamento UE 2016/679).

www.astrofilisusa.it

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*****
JPL/HORIZONS                      433 Eros (A898 PA)                      2019-Jan-14 09:17:28
*****
Ephemeris / WWW_USER Mon Jan 14 09:17:29 2019 Pasadena, USA / Horizons
*****
Target body name: 433 Eros (A898 PA) {source: JPL#644}
Center body name: Earth (399) {source: DE431}
Center-site name: Grange Observatory, Bussoleno
*****
Start time : A.D. 2019-Jan-14 20:00:00.0000 UT
Stop time : A.D. 2019-Mar-31 20:00:00.0000 UT
Step-size : 1440 minutes
*****
*****
Date (UT) HR:MN R.A. (ICRF/J2000.0) DEC Azi (a-approx) Elev APmag S-brt delta deldot S-O-T /r
*****
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2019-Jan-16 20:00 m 04 35 33.94 +37 59 11.8 145.2208 81.5471 9.11 4.34 0.20868753604367 0.2294992 134.4645 /T
2019-Jan-17 20:00 m 04 37 35.41 +37 05 32.8 150.2243 80.9406 9.12 4.35 0.20888278142702 0.3935182 134.0262 /T
2019-Jan-18 20:00 m 04 39 40.10 +36 11 45.0 154.5687 80.2737 9.13 4.36 0.20917170381643 0.5575771 133.5792 /T
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2019-Jan-24 20:00 m 04 53 05.75 +30 49 22.1 171.0433 75.5675 9.21 4.40 0.21287594435433 1.5446464 130.7579 /T
2019-Jan-25 20:00 m 04 55 28.17 +29 56 15.3 172.7593 74.7261 9.23 4.41 0.21382247571933 1.7092750 130.2718 /T
2019-Jan-26 20:00 m 04 57 52.59 +29 03 28.1 174.2928 73.8795 9.25 4.42 0.21486292148419 1.8734634 129.7834 /T
2019-Jan-27 20:00 m 05 00 18.90 +28 11 03.8 175.6705 73.0304 9.27 4.44 0.21599695099092 2.0369382 129.2937 /T
2019-Jan-28 20:00 m 05 02 47.02 +27 19 05.4 176.9148 72.1810 9.29 4.45 0.21722407556673 2.1994271 128.8035 /T
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2019-Feb-03 20:00 m 05 18 08.96 +22 18 54.9 182.4338 67.1757 9.43 4.52 0.22649653554696 3.1406367 125.8983 /T
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2019-Feb-05 20:00 m 05 23 27.09 +20 44 12.9 183.7767 65.5713 9.48 4.55 0.23028847256612 3.4372021 124.9609 /T
2019-Feb-06 20:00 m 05 26 07.86 +19 58 00.2 184.3859 64.7850 9.51 4.57 0.23230994215716 3.5816927 124.5007 /T
2019-Feb-07 20:00 m 05 28 49.68 +19 12 34.8 184.9598 64.0101 9.54 4.59 0.23441310465959 3.7235578 124.0468 /T
2019-Feb-08 20:00 m 05 31 32.48 +18 27 57.8 185.5022 63.2470 9.57 4.61 0.23659643514955 3.8627512 123.5997 /T
2019-Feb-09 20:00 m 05 34 16.19 +17 44 09.9 186.0167 62.4962 9.59 4.63 0.23885838790775 3.9992469 123.1596 /T
2019-Feb-10 20:00 m 05 37 00.74 +17 01 12.0 186.5062 61.7579 9.62 4.65 0.24119740800961 4.1330391 122.7268 /T
2019-Feb-11 20:00 m 05 39 46.08 +16 19 04.4 186.9735 61.0324 9.65 4.67 0.24361194298686 4.2641427 122.3016 /T
2019-Feb-12 20:00 m 05 42 32.13 +15 37 47.6 187.4209 60.3199 9.68 4.69 0.24610045546151 4.3925962 121.8842 /T
2019-Feb-13 20:00 m 05 45 18.84 +14 57 21.9 187.8506 59.6205 9.71 4.72 0.24866143800259 4.5184665 121.4746 /T
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2019-Feb-15 20:00 m 05 50 53.98 +13 39 03.5 188.6642 58.2614 9.77 4.77 0.25399504746125 4.7629091 120.6795 /T
2019-Feb-16 20:00 m 05 53 42.28 +13 01 10.8 189.0513 57.6017 9.80 4.80 0.25676499362501 4.8818148 120.2939 /T
2019-Feb-17 20:00 m 05 56 30.98 +12 24 08.7 189.4273 56.9551 9.83 4.83 0.25960209787282 4.9987994 119.9162 /T
2019-Feb-18 20:00 m 05 59 20.05 +11 47 57.1 189.7934 56.3217 9.86 4.87 0.26250532421411 5.1141044 119.5464 /T
2019-Feb-19 20:00 m 06 02 09.41 +11 12 35.5 190.1505 55.7013 9.89 4.90 0.26547377218471 5.2279523 119.1844 /T
2019-Feb-20 20:00 m 06 04 59.04 +10 38 03.5 190.4998 55.0938 9.93 4.94 0.26850665538981 5.3405111 118.8301 /T
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2019-Feb-22 20:00 m 06 10 38.96 +09 31 26.7 191.1776 53.9171 9.99 5.03 0.27476291204723 5.5620483 118.1442 /T
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2019-Feb-24 20:00 m 06 16 19.64 +08 28 02.5 191.8319 52.7906 10.05 5.13 0.28126853862565 5.7786485 117.4882 /T
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2019-Feb-27 20:00 m 06 24 51.94 +06 58 46.0 192.7769 51.1918 10.14 5.30 0.29148128136143 6.0931106 116.5590 /T
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2019-Mar-03 20:00 m 06 36 17.26 +05 10 04.2 193.9823 49.2214 10.27 5.56 0.30591078637469 6.4912245 115.4191 /T
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2019-Mar-06 20:00 m 06 44 52.82 +03 55 46.0 194.8538 47.8561 10.36 5.70 0.31731155586342 6.7737932 114.6340 /T
2019-Mar-07 20:00 m 06 47 44.95 +03 32 17.2 195.1391 47.4209 10.39 5.73 0.32121739028819 6.8650141 114.3849 /T
2019-Mar-08 20:00 m 06 50 37.21 +03 09 25.3 195.4221 46.9953 10.43 5.73 0.32517460882882 6.9548016 114.1416 /T
2019-Mar-09 20:00 m 06 53 29.58 +02 47 09.3 195.7030 46.5788 10.46 5.72 0.32918239957374 7.0432002 113.9042 /T
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2019-Mar-11 20:00 m 06 59 14.65 +02 04 20.9 196.2589 45.7725 10.52 5.66 0.33734660009294 7.2160646 113.4457 /T
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2019-Mar-21 20:00 m 07 28 02.32 +00 59 26.4 198.9625 42.1988 10.82 5.17 0.38099092996026 8.0328585 111.4205 /T
2019-Mar-22 20:00 m 07 30 54.92 +01 15 23.8 199.2291 41.8772 10.85 5.13 0.38560804164977 8.1142433 111.2364 /T
2019-Mar-23 20:00 m 07 33 47.45 +01 30 57.8 199.4953 41.5613 10.88 5.10 0.39027142461891 8.1960268 111.0547 /T
2019-Mar-24 20:00 m 07 36 39.91 +01 46 09.3 199.7612 41.2507 10.91 5.07 0.39498129928792 8.2781647 110.8753 /T
2019-Mar-25 20:00 m 07 39 32.32 +02 00 58.8 200.0267 40.9454 10.94 5.04 0.39973785265469 8.3605892 110.6980 /T
2019-Mar-26 20:00 m 07 42 24.67 +02 15 27.2 200.2917 40.6452 10.97 5.01 0.40454123046995 8.4432276 110.5226 /T
2019-Mar-27 20:00 m 07 45 16.98 +02 29 35.2 200.5564 40.3497 11.00 4.99 0.40939153821523 8.5260141 110.3491 /T
2019-Mar-28 20:00 m 07 48 09.25 +02 43 23.5 200.8205 40.0589 11.03 4.97 0.41428884657225 8.6088939 110.1772 /T
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2019-Mar-31 20:00 m 07 56 45.87 +03 22 57.2 201.6100 39.2125 11.11 4.91 0.42926308804619 8.8576893 109.6707 /T
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Column meaning:

TIME

Times PRIOR to 1962 are UT1, a mean-solar time closely related to the prior but now-deprecated GMT. Times AFTER 1962 are in UTC, the current civil or "wall-clock" time-scale. UTC is kept within 0.9 seconds of UT1 by introduction of integer leap-seconds for 1972 and later.

Conversion from the internal TDB timescale to the non-uniform UT time-scale requested for output has not been determined for UTC times after the next July or January 1st. Therefore, the last known leap-second is used as a constant over future intervals.

Time tags refer to the UT time on Earth, regardless of where the observer is located in the solar system. For example, if an observation from the surface of another body has an output time-tag of 12:31:00 UT, it refers to a time-scale conversion from TDB to UT valid at the center of the Earth, not the actual observer location elsewhere in the solar system, where clock rates may differ slightly due to the local spacetime metric and there is no precisely defined or adopted "UT" analog.

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. Later calendar dates are in the Gregorian system.

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 =

Astrometric right ascension and declination of the TARGET CENTER with respect to the observing site in the coordinates of the ICRF/J2000 inertial reference frame. Compensated for down-leg light-time.

Units: RA in hours-minutes-seconds of time (HH MM SS.ff),
DEC in angular degrees-minutes-seconds (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 = $H + 5 \log_{10}(\Delta) + 5 \log_{10}(r) - 2.5 \log_{10}((1-G)\phi_{11} + G\phi_{12})$

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

S-O-T /r =

Sun-Observer-Target angle; target's apparent SOLAR ELONGATION seen from the observer location at print-time. Angular units: DEGREES

The '/r' column indicates the target's apparent position relative to the Sun in the observer's sky, as described below:

For an observing location on the surface of a rotating body (considering its rotational sense):

/T indicates target TRAILS Sun (evening sky; rises and sets AFTER Sun)

/L indicates target LEADS Sun (morning sky; rises and sets BEFORE Sun)

For an observing point NOT on a rotating body (such as a spacecraft), the "leading" and "trailing" condition is defined by the observer's heliocentric orbital motion: if continuing in the observer's current direction of heliocentric motion would encounter the target's apparent longitude first, followed by the Sun's, the target LEADS the Sun as seen by the observer. If the Sun's apparent longitude would be encountered first, followed by the target's, the target TRAILS the Sun.

NOTE: The S-O-T solar elongation angle is numerically the minimum separation angle of the Sun and target in the sky in any direction. It does NOT indicate the amount of separation in the leading or trailing directions, which are defined in the equator of a spherical coordinate system.

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](telnet://ssd.jpl.nasa.gov:6775) (via command-line)

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