
Comet Prospects for 2024

Halley type comet 12P/Pons-Brooks makes a return and may reach 4th magnitude. Three other periodic comets may be bright enough for visual observation with a telescope.

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These predictions focus on comets that are likely to be within range of visual observers, though comets often do not behave as expected and can spring surprises. Members are encouraged to make visual magnitude estimates, particularly of periodic comets, as long term monitoring over many returns helps understand their evolution. Please submit your magnitude estimates in ICQ format. Guidance on visual observation and how to submit estimates is given in the BAA Observing Guide to Comets. Drawings are also useful, as the human eye can sometimes discern features that initially elude electronic devices.

Theories on the structure of comets suggest that any comet could fragment at any time, so it is worth keeping an eye on some of the fainter comets, which are often ignored. They would make useful targets for those making electronic observations, especially those with time on instruments such as the Faulkes telescopes. Such observers are encouraged to report electronic visual equivalent magnitude estimates via COBS. When possible use a waveband approximating to Visual or V magnitudes. These estimates can be used to extend the visual light curves, and hence derive more accurate absolute magnitudes. Such observations of periodic comets are particularly valuable as observations over many returns allow investigation into the evolution of comets.

In addition to the information in the BAA Handbook and on the Section web pages, ephemerides for new and currently observable comets are on the JPL, CBAT and Seiichi Yoshida's web pages. The BAA Observing Guide to Comets is available on the Section web page.

12P/Pons-Brooks was discovered by Jean-Louis Pons in 1812, then recovered as a new comet by William R Brooks in 1883. It was next seen in 1954 when it was well observed by the BAA comet section, with observations by George Alcock, Mike Hendrie, Albert Jones, Gerald Merton, Roy Panther, W. H. "Steve" Steavenson and Reggie Waterfield amongst others. Studies by Maik Meyer linked comets seen in 1385 and 1457 with 12P. With a well-defined orbit it was recovered at this return in mid-June 2020. It could be as bright as 11th magnitude at the beginning of the year, when it will be best seen in the early evening sky. It steadily brightens and will probably come within binocular range in late February. It could be a naked eye object by late March, but it is sinking lower in the sky, though it should be possible to follow it into the second week of April. UK observers won't see it again, but those in the Southern Hemisphere will be able to follow it as it fades after perihelion, when tail development may be greater. Around March 23 it passes a few degrees from the galaxy M33. It crosses the ecliptic on April 13, not far from Jupiter and Uranus. The fading comet then passes a couple of degrees from the much brighter globular cluster NGC 3201 around August 1.

29P/Schwassmann-Wachmann is an annual comet that has outbursts, which over the last few decades seem to have become more frequent, though this could just reflect more intense coverage. Richard Miles has developed a theory that suggests that these outbursts are in fact periodic, and arise from at least four independent active areas on the slowly rotating nucleus. The activity of the active areas evolves with time. The comet is an ideal target for electronic observations and it should be observed at every opportunity, ideally using the methodologies established by Richard. The comet begins the year in Cancer, approaching opposition later in January. It becomes poorly placed as it passes through solar conjunction between May and October and ends the year in Leo.

62P/Tsuchinshan reached perihelion in late 2023, but is closest to Earth in January and hence remains at around 7th magnitude, though best seen in the morning sky. With increasing distance from both Earth and Sun it fades rapidly in March as it moves towards opposition around the equinox. It passes through the Virgo cluster of galaxies in late January and February, passing

between NGC 4429 and NGC 4442 on January 28. It heads directly to within 10' of 11th magnitude galaxy NGC 4596 around February 16, but then moves away again to track back between the previously mentioned pair.

226P/Pigott-LINEAR-Kowalski maybe fading from 11th magnitude at the start of the year.

333P/LINEAR passes 0.54 au from the Earth in December when it is near perihelion and hence might reach 10th magnitude. However it is then likely to be large and diffuse so will not be an easy target.

The other periodic and parabolic comets that are at perihelion during 2024 are unlikely to become brighter than 11th magnitude or are poorly placed. Ephemerides for these can be found on the CBAT or other WWW pages. Several D/ comets have predictions for a return, though searches at favourable returns in the intervening period have failed to reveal the comets and the orbits will have been perturbed by Jupiter. There is however always a chance that they will be rediscovered accidentally by one of the Sky Survey patrols.

Note that returns of D/comets are awaiting preparation in Nakano Notes.

Looking ahead to 2025, 21 P/Giacobini-Zinner is the only comet that is predicted to reach even 11th magnitude. However, some orbits for comets due to return in the future are yet to be published by the MPC.

With more and more discoveries and recoveries of periodic comets being made, the number of expected returns increases every year. A full list of returning comets is given as a supplement, but first only those comets expected to be brighter than 14th magnitude during the year are listed.

Comets brighter than magnitude 14 in 2024

Comet	T	q	P	N	H ₁	K ₁	Elong at peak	Peak mag
At perihelion in 2023								
2P/Encke	Oct 22.5	0.34	3.30		10.2	9.6	9	13.7
62P/Tsuchinshan	Dec 25.1	1.26	6.18		4.8	32.8	110	6.8
226P/Pigott-LINEAR-Kowalski	Dec 27.2	1.77	7.31		6.0	15.0	88	10.6
At perihelion in 2024								
12P/Pons-Brooks	Apr 21.0	0.78	70.8		5.0	15.0	23	4.4
33P/Daniel	Nov 11.0	2.24	8.29		7.3	10.0	153	11.5
37P/Forbes	Oct 11.3	1.62	6.44		8.6	10.0	68	12.0
46P/Wirtanen	May 19.1	1.05	5.44		9.5	16.8	11	11.4
154P/Brewington	Jun 13.6	1.55	10.5		2.9	36.0	33	11.6
333P/LINEAR	Nov 29.3	1.11	8.67		10.7	20.0	89	10.4
At perihelion in 2025								
49P/Arend-Rigaux	Apr 10.6	1.43	6.75		9.6	10.0	75	13.3

The date of perihelion (T), perihelion distance (q), period (P), the number of previously observed returns (N), the magnitude parameters H₁ and K₁, the brightest magnitude (which must be regarded as uncertain) and the approximate elongation at which this occurs are given for each comet. In most cases the comet will be brightest at around the time of perihelion.

Note: $m_1 = H_1 + 5.0 * \log(d) + K_1 * \log(r)$

The full table of comets due to reach perihelion in 2024 has not yet been prepared.

References and sources

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Minor Planet Electronic Circulars

Nakano Notes at <http://www.oaa.gr.jp/~oaacs/nk.htm> (Accessed 2021 February)

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