

VSOTY 2026 W Ursae Majoris

W UMa was identified as a variable star in 1903 by the German astronomers Gustav Müller & Paul Kempf and it was found to have a very short period of four hours. It was not immediately clear what type of variable it was but in 1919, Adams & Joy found it to be an eclipsing binary (EB) with an actual period of 8 hours.

W UMa is a contact EB with the two stars of the system sharing a common envelope. W UMa was the first of this class of EB and is therefore the prototype. There are now known to be over 7000 EBs of the W UMa class in the Variable Star Index: < <https://vsx.aavso.org/>>. The class includes stars that are nearly in contact and stars that are wholly within the envelope of a red giant.

W UMa has a period of 0.33366375 days during which two almost equal eclipses take place. It varies from 7.8 magnitude to 8.5 and is therefore a binocular object. The primary minimum is 0.7 magnitude in depth and the secondary minimum is 0.6 magnitude in depth. Such variations can be seen within visual observations from which good light curves can be constructed. Very good clean light curves can be derived from DSLR photometry.

Contact binaries vary continuously as the image below illustrates. This image drawn from the BAA VSS database, represents recent measurements contributed by C Watkins with a TG filter. A whole period covering the two eclipses can be observed in one night with only about four hours between each eclipse and measurements are recommended every ten minutes.

BAAVSS observers began monitoring W UMa in 1977. Ursa Major is a circumpolar constellation for many observers based in the northern hemisphere, so W UMa is accessible for most of the year. However, observers in the UK may find it difficult to observe in the twilight summer months when W UMa may only be 23 degrees above the horizon.

W UMa has been the target of the orbiting telescope NASA's Transiting Exoplanet Survey Satellite (TESS). It might be thought that Earth based observations have little value compared with what can be obtained by the orbiting telescope but this is not the case as the TESS data is not continuous. It has been shown that there is mass transfer between the components of the W UMa system which results in changes to the period. The closeness of the two stars results in intense magnetic fields which can produce large star spots as well as contributing to period changes. Earth based amateur astronomers can detect these and thereby contribute to the study of this class of EBs and help answer questions about the origin of contact binaries and how they may evolve including the possibility of stellar mergers.

Light Curve for W UMA

