

Variable Star of the Year - RS Canum Venaticorum

RS CVn was discovered in 1914 by Madame Lydia Ceraski who was the wife of the Director of the Moscow Observatory. She was not a trained astronomer and did not hold an astronomical post but undertook, like the Harvard 'computers', to examine the photographic plates that were produced by the Observatory. Her discovery was, therefore, not made by direct observation. The discovery was published under her husband's name though he acknowledged her role. She discovered many variable stars. From the plates she recognised a new Algol eclipsing binary system. The peculiarities of the light curve of the system confused astronomers for some time to come. It was not until 1946 that Otto Struve identified the 'RS' group of eclipsing binaries. Further work was done on the characteristics of the group by Oliver (1974) and Hall (1976).

RS CVn is an eclipsing binary of the Algol type. It has a period of about 4.8 days. The primary eclipse lasts about 13 hours with a depth of about one magnitude. The system fades from around 8 to a magnitude of 9.1. The secondary eclipse is much shallower with a depth of 0.2 magnitude. The primary eclipse can be detected visually with binoculars but DSLR/CCD photometry will be needed to study the secondary eclipse.

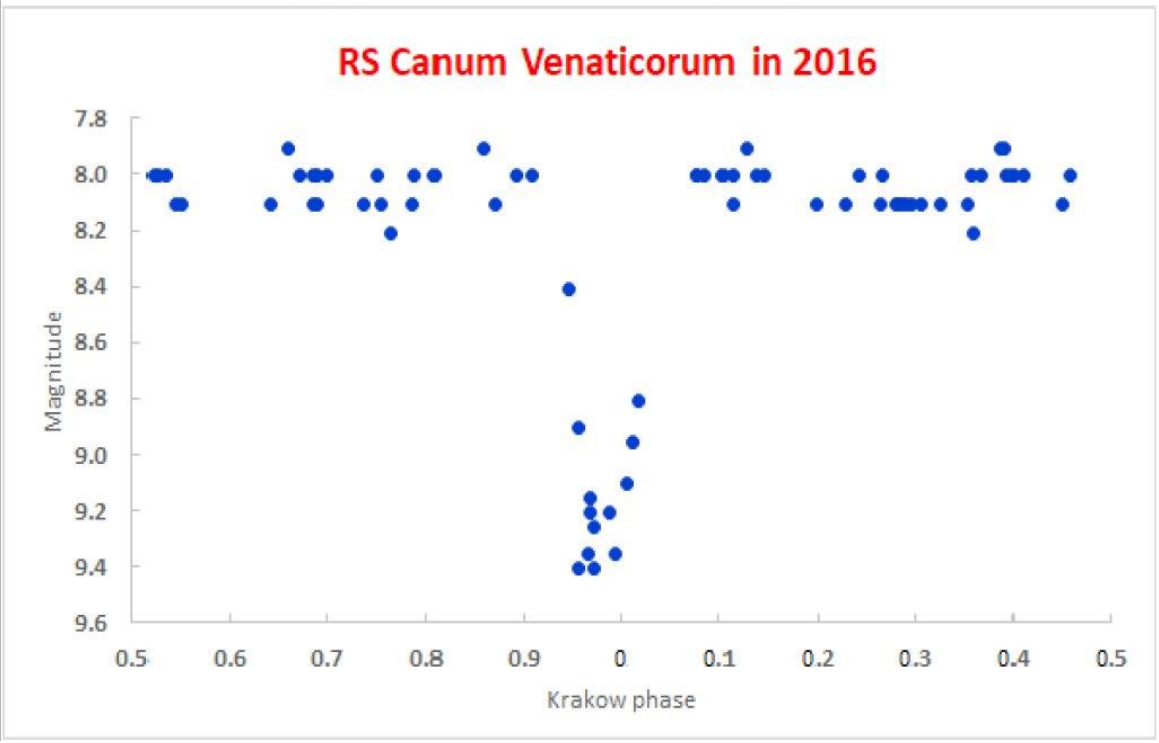
RS CVn is the type system of a sub class of eclipsing binaries. Such systems have the designation RS so that RS CVn is an EA/RS system. This sub class consists of stars that are 'chromospherically active'. They have cool, large stellar spots which are so large that they can cause variations of up to 0.4 magnitude in the light curve. Such variations within the light curve can be detected by DSLR photometry particularly if the measurements are obtained at a high quality dark sky site where atmospheric turbulence is minimal.

The variations in the light curve are repeated for a period of time, in between eclipses, at intervals similar to the orbital period. IBVS 5838 (2008) reports on the star spot variations of the V841 Cen system. The title of the report is 'A Large, Long Period Spot Wave'. The amplitude of the variation in that system was 0.4 magnitude. The variation was stable for over six months. Another report was made in IBVS 5772 (2007). The title is 'GSC 3372-0296 is a new short period Eclipsing RS CVn Variable'. The star spot(s) are about 0.2 magnitude. The report publishes a light curve which illustrates what might be seen when observing this type of system.

Details of the variations of RS CVn will be of interest to all those studying 'chromospherically active' stars. Such details will be obtained by systematic out of eclipse measurements. If a star spot is identified spectroscopists should be alerted.

RS CVn, a giant orange/red star 522 light years from Earth, is straightforward to find out of eclipse with a magnitude of around 8.00. You star hop with the naked eye by going to the end of the handle of the Plough and then to the brightest star in the constellation Canes Venatici, which has a magnitude of around 2.84, called Cor Caroli. From this star, using binoculars it is easy to find the nearby star, 14 Canum Venaticorum, which has a magnitude of 5.18. RS CVn will be in the same field of view as 14 Canum Venaticorum and, as the BAAVSS chart (253.01) illustrates, it is associated with an easily recognizable asterism of 5 stars including itself.

RS CANUM VENATICORUM LIGHT CURVE



253·02

5° FIELD DIRECT

RS CANUM VENATICORUM 13h10m 36·9s +35° 56' 05" (2000)

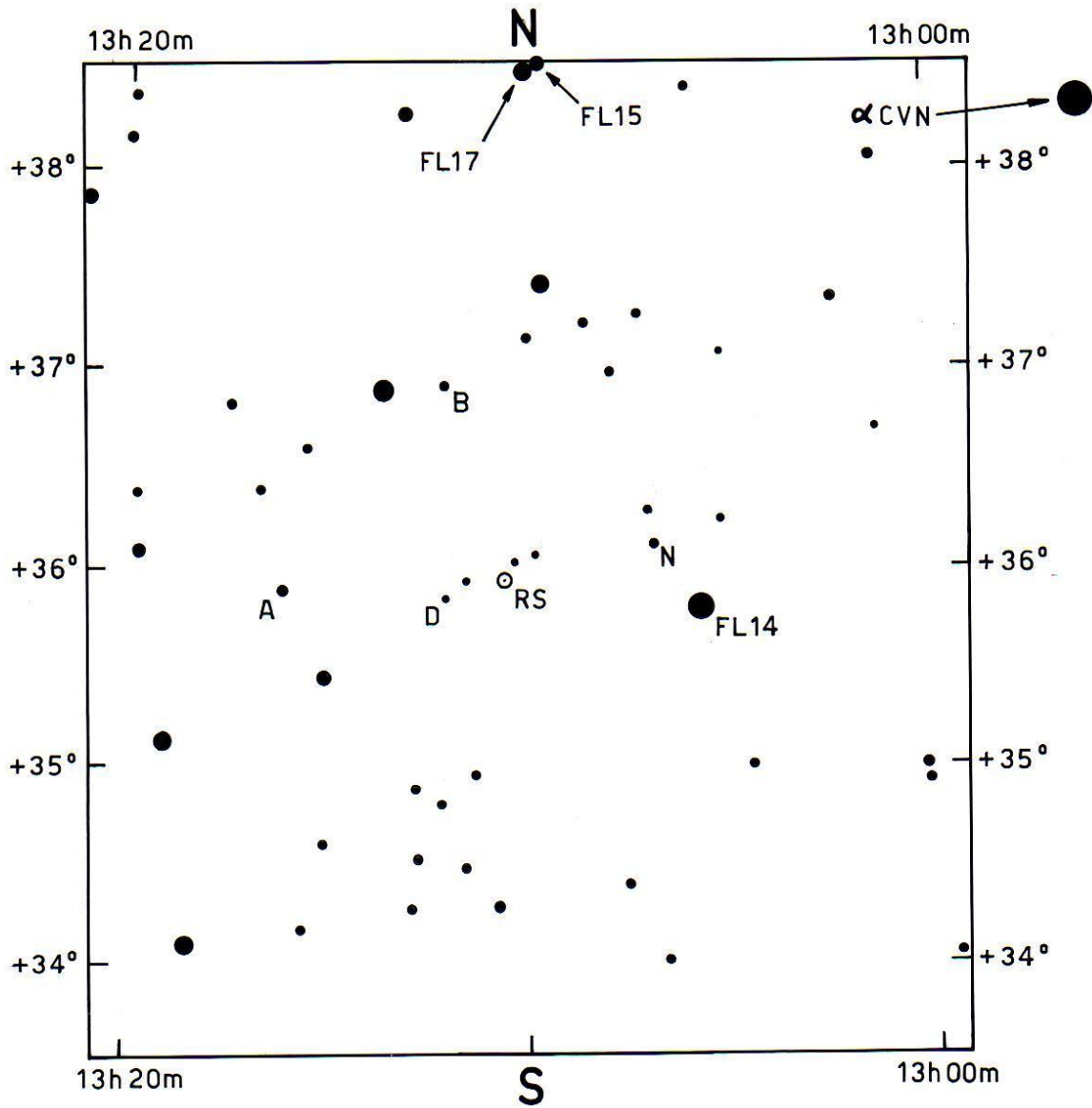


CHART:
MILLENNIUM SA
SEQUENCE:
HIPPARCOS VJ

A 8·3 N 9·3
B 8·9 D 9·9

BAA VSS
EPOCH: 2000
DRAWN: JT 19-06-18
APPROVED: RDP