

Bright and interesting Cepheids

Cepheids are yellow supergiant pulsating variable stars, which are probably the best-known and important of all pulsating variables. Generally, Cepheids have large amplitudes, making it possible to find them even in distant galaxies. The reason Cepheids change their brightness is believed due to pulsations mechanism.

The term *cepheid* originates from Delta Cephei in the constellation Cepheus, identified by John Goodricke in 1784. But, historically, the first known representative of the class of Classical Cepheid variables is Eta Aquilae which variability was detected on September 10, 1784 by Edward Pigott (1753 – 1825).



John Goodricke (1764 – 1786) was an extraordinary amateur astronomer. Since early childhood, he was deaf due to a severe illness. By that time, several stars were only known as variables. Among them, the Algol (Beta Persei).

He made a suggestion that apparent magnitude is changing due to eclipsing nature of the satellite motion, means the star has a companion. Years later it was confirmed, and similar variables is now known as eclipsing binaries. Goodricke was elected a Fellow of the Royal Society on 16 April 1786, but died four days later...

Cepheids are mostly known for their period-luminosity relation discovered by Henrietta Leavitt in 1908 (published in 1912), as a result of investigation of hundreds of variable stars in the Magellanic Clouds. This important relation allowed to measure distance within the Universe.

The closest Cepheid is Polaris, but its range in visual band is only 0.02 magnitude. The Hipparcos satellite measured Polaris' parallax to be 0.00756 arc sec, giving the distance about 430 light years.

The table on the right is the list of the most interesting and easy to observe Cepheids visible from mid-northern latitudes.

Star	HD #	Mag. Range (V)	Period
α UMi	8890	1.86 – 2.13	3.9696
T Mon	44990	5.58 – 6.62	27.024649
RT Aur	45412	5.00 – 5.82	3.728115
ζ Gem	52973	3.62 - 4.18	10.15073
X Sgr	161592	4.20 – 4.90	7.01283
W Sgr	164975	4.29 – 5.14	7.59503
SU Cyg	186688	6.44 – 7.22	3.845547
FF Aql	176155	5.18 – 5.68	4.470916
S Vul	338867	8.69 – 9.42	68.464
V473 Lyr	180583	6.00 – 6.35	1.49078
SV Vul	187921	6.72 – 7.79	45.0121
η Aql	187929	3.48 – 4.39	7.176641
S Sge	188727	5.24 – 6.04	8.382086
X Cyg	197572	5.85 – 6.91	16.386332
T Vul	198726	5.41 – 6.09	4.435462
δ Cep	213306	3.48 – 4.37	5.366341

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