

Hertzprung - russell diagram essay sample

[Science](#), [Genetics](#)



Einar Hertzsprung and Henry Russell, independently, studied how the brightness and temperatures of stars relate, and developed the Hertzsprung-Russell diagram. The H-R diagrams are studied to understand how stars relate in terms of size, color and temperature.

Before producing an H-R diagram, a portion of the sky is surveyed by astronomers and each star plotted according to its brightness and temperature. Ordinary stars, also called main-sequence stars, fall within the band from the upper-left portion to the lower-left portion of the H-R diagram. They constitute about 90% of the H-R diagram stars. The intrinsically brightest main sequence stars are the hottest while the intrinsically dimmest are coolest. The brightest stars are about 50 times as massive as the sun while the dimmest stars are only a tenth of the sun. The main-sequence stars appear, on the H-R diagram, from the hotter, larger blue stars to the cooler, smaller red stars. The Sun is a yellow main-sequence and has absolute magnitude of 5. The magnitude of most of the main sequence stars fall between -5 and 15. The Sun lies in the middle of this range and is, therefore, considered an average star.

Red giants are a group of luminous stars located to the upper right portion of the H-R diagram. Since objects with the same surface temperatures radiate equal amount of energy per unit area, stars of known size are used in the estimation of the size of red giants. Giants have large radiating surfaces and are, therefore, located on the upper right part of the H-R diagram.

Betelgeuse is a bright red supergiant in the Orion constellation. Its radius is 800 times the radius of the Sun. Other red giants include Arcturus and Antares in the Bootes and Scorius constellations respectively.

White dwarfs are located below and to the left of the main sequence stars. They are smaller and fainter as compared to main sequence stars of equal temperature. Stars are born, age and die. Their active years are spent as main sequence stars.

Reference

Lutgens, F. K., & Tarbuck, E. J. (2011). Foundations of Earth Science. New Jersey: Prentice Hall.