pre-main sequence
protoplanetary disk
main sequence
HR diagram
dwarf star
brown dwarf
hydrostatic equilibrium
nuclear fusion
pp chain
CNO cycle
post main sequence
red giant
red supergiant
supernovae
spectral type
OBAFGKM(LTY)
molecular cloud
open cluster globular cluster
shell burning
thermal pressure
deuterium
neutrinos
UBVRIJHKQMN
white dwarf
neutron star
black hole
interstellar medium
planetary nebula
The Sun
Stars are the building blocks of the universe
To get a sense of what stars are and how they work, we will start by looking at the Sun.
the Sun is made up of $2 \times 10^{30}$ kilograms of mostly hydrogen and helium

(more than 10,000 times more massive than the Earth)

it stretches 700,000 kilometers from center to edge

(more than 100 times wider than the Earth)
the part we can see is just the very outer edge

(you don’t need to know the names of all the layers)
density and temperature increase towards the center

(density of $10^3$ kg/cc and temperature of 15 million kelvin at center, temperature at the surface of 6,000 kelvin)
the fact that there were absorption lines in the Solar spectrum told us that the temperature at the surface was larger than at the center
SDO Sun movie
sunspots seen in the extreme ultraviolet
The Sun’s emission in only the H-alpha line
a solar flare erupting off of the sun
solar corona
Extreme Ultraviolet wavelengths (temperatures of up to 1 million kelvin)