

# Birth of Our Sun

## Stage 1

- dense interstellar cloud
- Temperature 10 K, mass thousands of times that of the sun, 100's of light years apart

## Stage 2

- Gas becomes gravitationally unstable
- Starts to collapse and break into smaller pieces

## Stage 3

- as the cloud collapses it releases energy and heats up
- temperature in core 100 K ( -173 Celcius)
- Fragmentation of large cloud stops

## Stage 4

- Star about the size of our solar system
- Central temperature reaches 10,000 K
- Outside parts of star remain cool
- Emits radiation into space in radio frequencies

## Stage 5

- 100,000 years after star started to form
- Core reaches 1,000,000 K
- About the size of Mercury's orbit - Much more luminous than our sun
- Red giant star on H-R diagram
- Still collapsing

## Stage 6

- still collapsing and heating up
- about 10 times the size of the sun
- Surface temperature 4000 K
- Core Temperature 5,000,000 K

## Stage 7

- 10 million years after it started to form
- Core temperature reaches 10,000,000 K
- Hydrogen fusion starts in core
- Still slightly larger and cooler than the present day sun

## Stage 8

- over next 30 million years temperature increases slowly, density increases slowly and temperature increases until it reaches 15,000,000 K

## Stage 9

- Main sequence star
- at this point our sun is stable and will not change for the next 10 billion years.