


**The Birth of Stars**

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**When:** 6pm, Thursday 2 August, 2012

**Where:** Lecture theatre S3, Monash University, Clayton Campus

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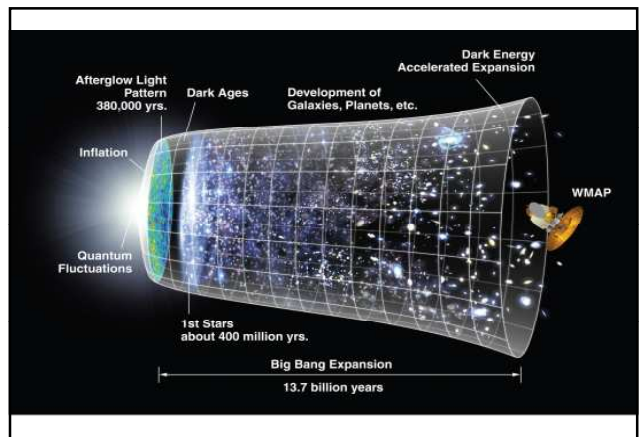


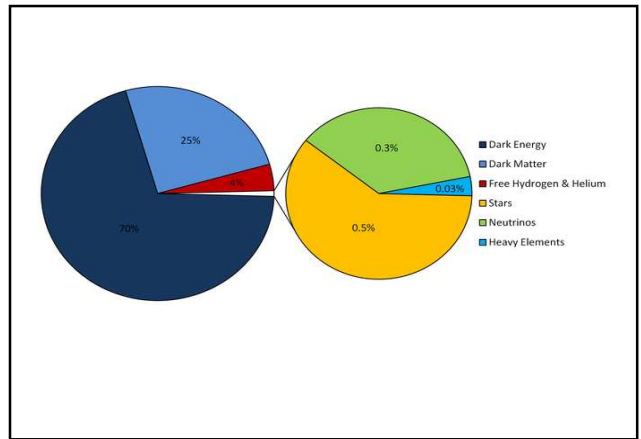
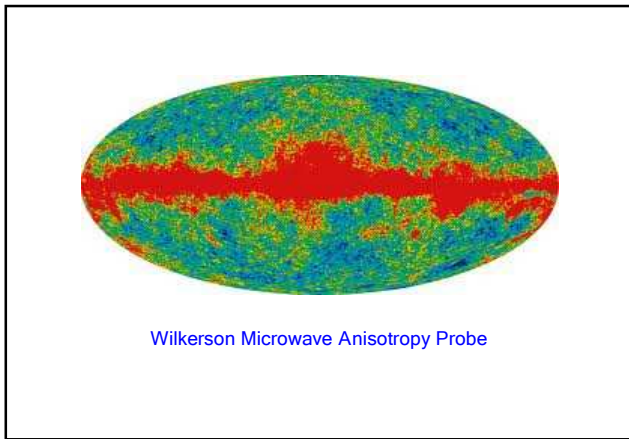
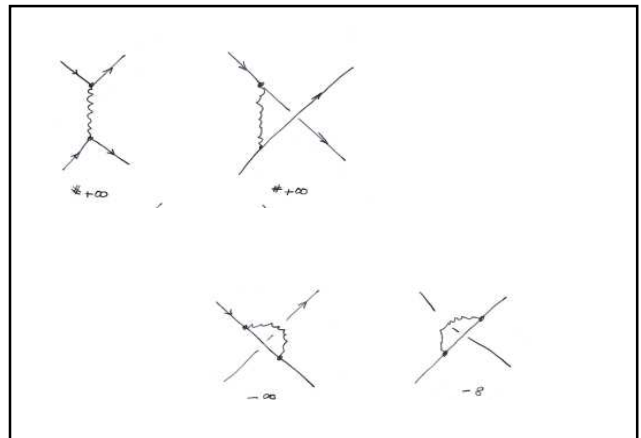
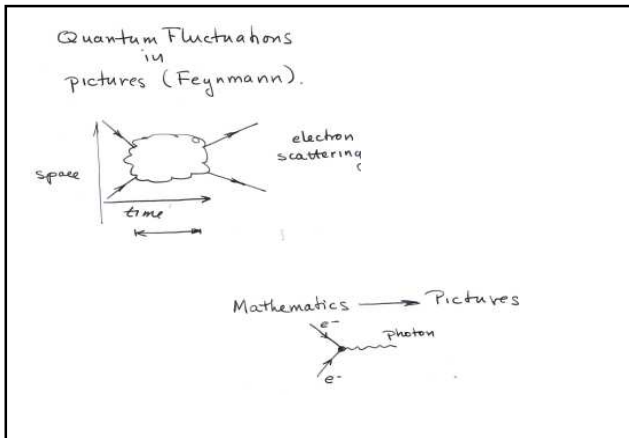
**The New Standard Cosmology**

- 1) The universe we live in emerged from an early epoch of rapid expansion (called inflation), then slowed its expansion rate.
- 2) The universe today is flat and the acceleration of its expansion is increasing. (Flat refers to the fact that the universe has almost zero curvature.)

**The New Standard Cosmology (2)**

- 3) The irregularities in the universe today (galaxies, stars, and all the rest, including ourselves) resulted from quantum fluctuations during the inflationary epoch.
- 4) The universe is made up of 70% Dark energy and 30% matter.
- 5) The matter in the universe is made up of seven times more dark matter (non-baryonic matter) than matter in the form of bright stars.



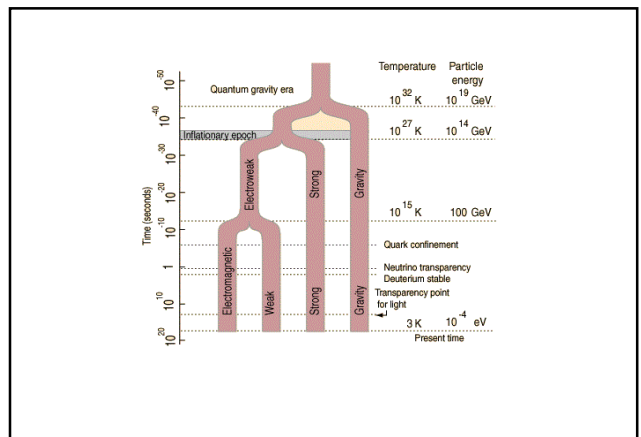


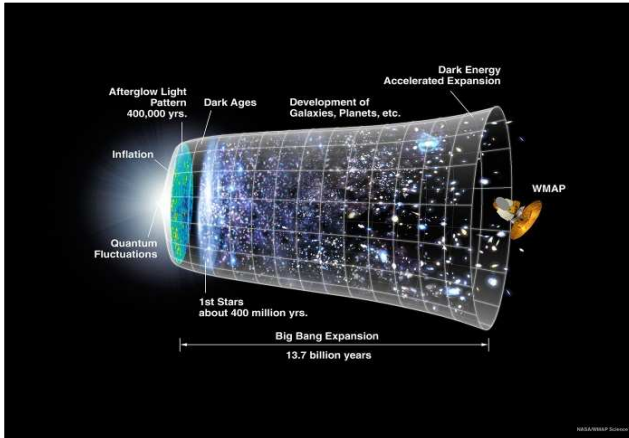
Physics also deals with aggregates of particles – where it treats them statistically.

Average Kinetic Energy of a particle =  $\frac{3}{2} k T$

where T is the temperature of the collection and k is a Universal constant called Boltzmann's Constant.

The hotter something is the faster are its components (atoms, particles) moving so the less likely they are to be stable.



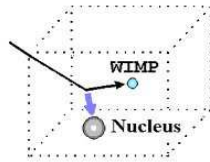


The universe is "a poor man's accelerator" (Yakov Zel'dovich).

Since the 1980's particle physicists and astronomers have pieced together a chronology of the universe from the big bang.



Experimental Particle Physicists turn their attention to Cosmological questions



What do you think of the "Big Bang".