Lecture 18: Announcements

- Review session on Wed Mar 2 (today)from 6.30 to 8.00 pm in RLM 5.118. Bring your homeworks 1+2+3 for discussion

- Exam on Wed Mar 9: Bring a bluebook for the exam. You can get them from the co-op : Makes up 20% of total grade . See webpage for a description of the exam format

  http://www.as.utexas.edu/~sj/a301-sp05.html

- Lesson from HWK 1 and 2: If you copy your assignment or let someone else copy yours, you both get 0. One or 2 zeros, will get you on Dean's report.

Lecture 18:Astronomy Picture of the Day

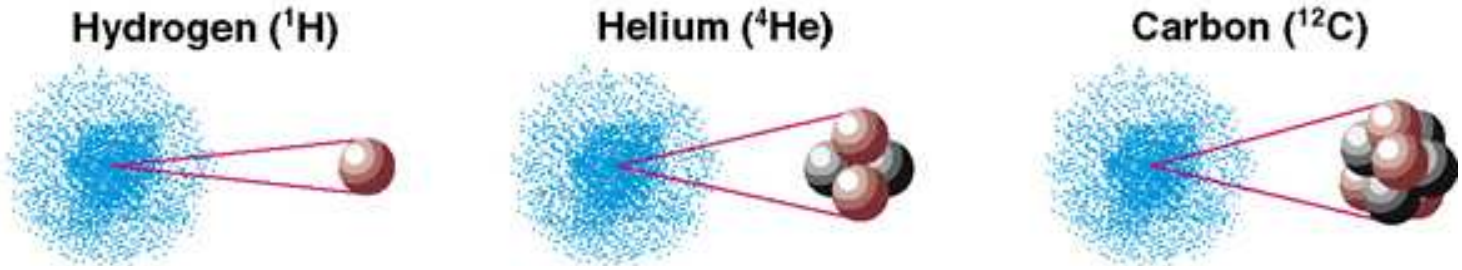
Interacting pair of galaxies NGC 1531 and NGC 1532 ,the foreground spiral galaxy laced with dust lanes. The pair is about 55 million light-years away

Properties of the Sun and Other Stars

Topics to be covered in class

- Structure of the Sun
- Why do we have no neutral atoms in the core of the Sun?
- Energy generation via nuclear fusion in the core
- The Sun is in gravitational equilbrium. Why? Will it stay this way?
- Sunspots size, temperature, cycle, and why they exist at all
- Solar cycle, and magnetic field of the Sun
- Why do we get auroras?
- Zeeman splitting

Why are there ions but no neutral atoms in the hot solar core?



-- An electron (e-) has a –ve charge. A proton (p+) has a +ve charge.
A neutron has no charge.

-- An atom is made up of one or more **bound** e- orbiting a nucleus made of p+ and n.
The bound e- can only exist at certain specific energy levels
The atom has zero net charge as no of electrons (e-) = No of protons (p+)
^{1}H atom : 1p, 1e, 0 n ^{4}He atom: 2p, 2e-, 2n ^{12}C atom: 6p, 6e-, 6 n

-- If colliding atoms have a high temperature, i.e. a high kinetic energy,
à their bound electrons gain enough energy during the collision to move from the lowest energy levels to beyond the highest energy levels, and become a free electron
à Result is a sea of free electrons and positively charged nuclei

Fusion of proton into Helium nuclei: The proton-proton chain