Theme: SN1a as standard candles

1. figure out how many binaries we have in the average.

what are their common masses and distances?

2. A type 1a SN has no hydrogenium lines but silicon lines: why do we want especially this SN?

3. A white dwarf with mass m2 sucks mass from its partner (let it be a red giant) with mass m1 and radius r1:

derivate the Roche-limit

4. build a formula for the gravitational Energy of a star:

a) for constant density roh.

b) for a density-function  roh(r) = roh0\*e^-k\*r

5. from Heisernbergs relation follows the localisation-energy of a particle with mass m

dE = h²/8pi²\*m\*dr²

This is also the Fermi-Energy of an Elektron-gas.

Show, that The pressure p is

p = h²/(12pi²\*me)\*roh^(5/3)/(my\*mp)^(5/3)

and compare to the hydrostatic pressure.

Me: electronmass

Mp: protonmass

Roh: averrage stardensity

My: molar mass (=2 for every Proton there is a Neutron in average)