Physics 3368

Professor Olness

Astrophysics & Cosmology: Fall 2000

Assignment #1

- You are talking via phone to an alien from planet X. Without transferring any pictures, can you explain to the alien which is his left hand. (Assume the alien has a left and right hand, but nothing else about his surroundings are known; and, you can not transmit any visual information.)
- The average density of the galaxy is 3x10^-28 kg/m^3. Convert this to protons per m^3.
- Shrink the sun to a point. Compute the escape velocity (from classical physics) as a function of radius. Determine the radius where the escape velocity equals the velocity of light.
- Your mission, should you choose to accept it,* is to make a map on a flat piece of paper of the northern hemisphere of the world in such a way that the distance between cities is preserved. Is this possible? Why? (*P.S. You must accept this mission for full credit.)

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