**List of subjects on order for presentation. In line with the Snazzy prezie!**

**Start:**

What is a neutron star (one liner):

After a star can no longer sustain nuclear fusion and dissipates all other free energies opposing gravitational contraction on its own mass, it collapses onto its core. This core if greater than the Chandrasekhar mass limit will be supported by neutron degeneracy: A neutron star.

Due to the extreme conditions within a neutron star we cannot experimentally validate the internal structures. We then take our current understanding of nuclear and particle physics and observations of neutron stars and derive an equations of state consistent with both….

Our project aimed to simulate NS using this to compare with theory.

(Understand the principle of hydrostatic equilibrium)

We used HYDROs and EOSs along with numerical integration…..

(understand basics about where the above come from)

Follow presentation from Building a star through to results.

Talk about how the Newtonian is not a good model.

The TOV is good fit in comparison, this is due to the explicit pressure dependence on the pressure gradient, giving an increased mass for a smaller radius. (note if you take away the c terms in the tov it reduces to the Newtonian form).

The lower mass limits in the simulation are unphysical. Why ?

(Understand what the different density regions are of the distributions and what they may mean)

What the distributions mean for each EOS.

Very brief discussion of inclusion of special relavatisitc rotational effects to give indication as to what happens. Can we adapt the pressure density like this? The EOSs Assume no rotation.

Erros – to give validity to calculations – Brief

Integration methods – Brief

Step size change, computational time vs accuracy.

Conclusion. What we have learn and therefore would apply going forward.