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## The great collision

### **Interim proposal**

The galactic collision of the Andromeda and the Milky Way Galaxies is something in the not so near future that will possibly change our solar system and will definitely change our Galaxy. As the next six to eight billion years go by, we will see the galaxies come closer and closer together. The Andromeda Galaxy's radius is 110,000 light years across and the Milky Way Galaxy's radius is 100,000 light years across. The Andromeda Galaxy is approaching the Milky Way Galaxy at a speed of 110 kilometers per second, which is 396,000 kilometers per hour. This speed is coming at us at a distance of 2.537 million light years away.

Our goal is to see why this galactic collision is happening and what effects does dark matter and dark energy have on this occasion. Dark matter is one of the biggest mysteries we somewhat know about. We actually know more about what it is not than what it is. The reason we know dark matter exists is because the Milky Way is spinning at 2.1 million kilometers per hour, the general idea about what happens when orbiting an object is that the outer objects that are orbiting will go slower than the ones closer to the center. Yet, when we examine a galaxy, we notice that all the stars in the galaxy are moving at the same exact speed. There is a force allowing the stars to continue to stay in the galaxy and not get shot out into open space. The

answer to why they do not get shot out into open space is a force we have labeled as dark matter. Dark energy is the force making the expansion of the universe accelerate. The world thought that the universe will eventually stop, and then start going back into each other as the universe will collapse inwards. But when we examine galaxies, we expected to see them slowing down, but they are speeding up. Something had to be making this acceleration happen. The answer was a force doing it we now know as dark energy.

We have created one of our galaxies in mayan so that our model has original designed galaxies to improve what happens. We want to finish all the models soon and start the code in panda 3D using python to code. We expect to see dark matter or dark energy to have an influence on why this collision is happening. Although this has been researched by scientists already, we want to answer the question “why is this happening anyways?” these galaxies were so far apart, yet they somehow are being pulled together. Dark matter, or also known as dark gravity could be the main culprit on why this is happening. When want to know if this was just somehow a natural occurrence, if dark gravity does have an effect on this, or if it’s something else that will shock the whole world.