Gamma Radiation

This project is about Gamma Radiation. What is Gamma Radiation? Well to define Gamma Radiation you have to first look at what causes these radiations, they are ‘ produced by the hottest and most energetic objects in the universe, such as neutron stars, pulsars, supernova explosions, and regions around black holes’. (https://swift.gsfc.nasa.gov/archive/grb_table/) Gamma Radiation is similar to visible light, but has much higher energy. Gamma Radiation is often emitted along with alpha or beta particles during radioactive decay. (https://www.arpansa.gov.au/). ‘Gamma Radiation is a Radiation of hazard for the entire body. (https://www.nrc.gov/). They can easily ‘ penetrate barriers that can stop alpha and beta particles, such as skin and clothing’ . (https://science.nasa.gov/ems/12_Gammarays/). Apparently statistics state ‘ there is only one Gamma Radiation burst a day’. (www.epa.gov/radiation/Radiation). Gamma-ray photons have the highest energy in the EMR spectrum and their waves have the shortest wavelength. Scientists measure the energy of photons in electron volts (eV). X-ray photons have energies in the range 100 eV to 100,000 eV or 100 keV. Gamma-ray photons generally have energies greater than 100 keV. Gamma rays have the highest energy, highest frequency, and shortest wavelength among all the types of electromagnetic waves. Electromagnetic waves transfer energy and are formed from the oscillation of electric charges. The data that has been collected so far only show the one burst that occurs a day and in only the area of and around the earth. How do we know how many are actually going off at any time and all over the whole universe, not just one secluded area? With my team's universal model approach we can solve this problem. We are trying to predict how many Gamma Radiation bursts are occurring at any given moment in time and everywhere in the universe using an application called NetLogo. Using netlogo we will create a universal model to show how many of these bursts are actually going off all over the universe. For the progress that my team and I have made is enough to predict a little bit of how this project will end. We did a lot of research before even attempting to start the model. We used various websites and articles to broaden our view of Gamma radiations. Then we downloaded NetLogo. NetLogo is an excellent tool for introducing the concepts of agent-based modeling and developing small agent-based models. We used NetLogo to design our understanding of the universe. We coded through the designs to figure out what looked the best and would give the best results. We are currently fine tuning the code to achieve the proper probability for a Gamma Ray Burst intersecting a satellite’s detection range. We expect a few thousand Gamma Radiation Bursts around the universe with these results so far. In conclusion my team and I firmly believe our universal model approach to this project will lead us to a reliable answer to how many Gamma Radiation Bursts are actually going off all around the universe at any time.

CITATIONS

https://swift.gsfc.nasa.gov/archive/grb_table/
https://science.nasa.gov/ems/12_Gammarays/
www.epa.gov/radiation/radiation
https://www.nrc.gov/
https://www.arpansa.gov.au/