THINK INDIA JOURNAL

ISSN:0971-1260
Vol-22- Issue-14-December-2019

Astrophysics And Astrobiology In Action

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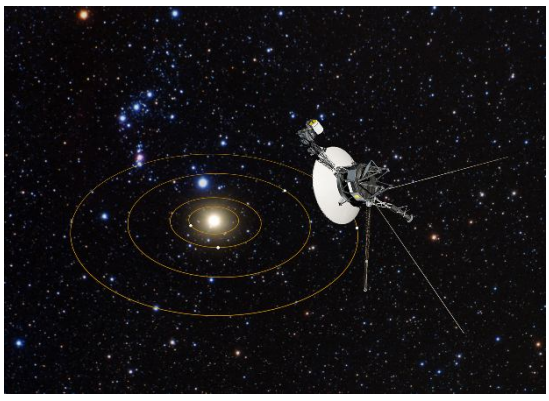
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ABSTRACT

This paper mainly contains about the technological advancements towards the catastrophic situations like meteor collision. It highlights the history of some famous meteors and meteorites that had been noticed, and areregarded as a remarkable discovery in the history of mankind.

Scientific discoveries and inventions have in fact propelled man to get ready to face such a challenge in the mere future. And with his Superior Brain. Man has been able to develop aerospace science and astronomical science in such a way that now humans can go beyond the limit of their own naked eyes .These achievements could possibly bring and end to all sorts of confusion and misery in the upcoming future.

Keywords: Astronomy, Astrobiology, Exoplanets, HEC.



This is the image representation of VOYAGER1, Earth's most distant spacecraft, left the solar system and entered interstellar **space** in 2012. According to NASA, it is currently speeding away at 38,200 mph.

The following photos depicts the nature and movements of a foreign body, ore precisely a Meteor.



1.0 INTRODUCTION

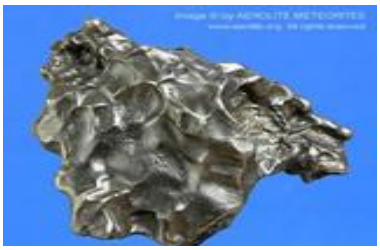
Meteor:-Predominantly these are the pieces of dust and debris from space that burn up in Earth'satmosphere, where they can create bright streaks across the night sky. When Earth passesthrough the dusty trail of a comet or asteroid's orbit, the many streaks of light in the sky areknown as a **meteor shower.**

Basically its observed that there are three types of meteorites-

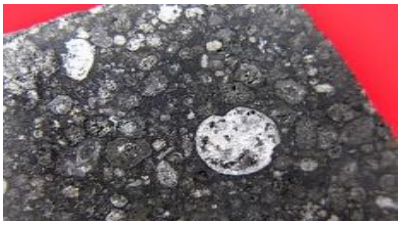
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ISSN:0971-1260
Vol-22- Issue-14-December-2019

1. Iron Meteorites



2. Stone Meteorites



3. Stony-Iron Meteorites



Stony meteorites make up about 94 percent of all known meteorites, irons about 5 percent, and stony irons about 1 percent. There is considerable diversity within each category, leading to numerous subdivisions (classes, groups, etc.) based on variations in chemistry, mineralogy, and structure. It is important to realize that meteorite classification is based primarily on observable characteristics.Iron meteorites were once part of the core of a long-vanished planet or large asteroid and are believed to have originated within the Asteroid Belt between Mars and Jupiter. They are among the densest materials on earth and will stick very strongly to a powerful magnet. The largest group of meteorites is the stones, and they once formed part of the outer crust of a planet or asteroid. Many stone meteorites-particularly those that have been on the surface of our planet for an extended period of time-frequently look much like terrestrial rocks, and it can take a skilled eye to spot them when meteorite hunting in the field. Freshly fallen stones will exhibit a black fusion crust, created as the surface literally burned during flight, and the vast majority of stones contain enough iron for them to easily adhere to a powerful magnet.The least abundant of the three main types, the stony-irons, account for less than 2% of all known meteorites. They are comprised of roughly equal amounts of nickel-iron and stone and are divided into two groups: pallasites and mesosiderites. The stony-irons are thought to have formed at the core/mantle boundary of their parent bodies.

Phases of a Meteor

1. A foreign body in space away from the Earth. is referred to as a Meteoroid. Not to be confused by an asteroid as an asteroid will fly past, but, if it was coming to us then its meteoroid.

2. When the foreign body enters the atmosphere, it becomes a Meteor which normally burnsup. The Earth is bombarded by meteors every day, fortunately, they are so small that they burn up and we don't get to hear about them.

3. If however the foreign body lands on earth, it is referred to as a Meteorite. When a meteorite hits like they did in Chelyabinsk, we all get to hear about it.

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ISSN:0971-1260
Vol-22- Issue-14-December-2019

2.0 FACTS AND HYPOTHESIS

2.1 Facts

1. Meteoroids travel through our atmosphere at a speed of 10 to 70 km/second.
2. When a meteoroid hits the atmosphere of the Earth, they can be travelling as fast as 130,000 mph(209,215 km).
3. A meteorite will hit a human being once every 180 years according to a study by Nature done in 1985.
4. 4 billion meteorites enters gravitational field, it covers anything greater than inter-planetary dustless than Asteroid.

Now according to Einstein's Theory and 'God's equation, no paticle can surpass the limit for velocity of travel, i.e. speed of light !

v=c (God is light)

$\frac{v^2}{c^2} = \frac{c^2}{c^2} = 1$ (this fraction equals one)

$\sqrt{1-\frac{v^2}{c^2}} = \sqrt{1-1} = \sqrt{0} = 0$ (this square root mess ends up

$m_0 = \frac{m}{\sqrt{1-\frac{v^2}{c^2}}} = \frac{m}{0} = UNDEFINED$ (God's size is not measur

2.2 Hypothesis

But. even if we can't surpass the speed limit, we could go closer any way. Let a particle,consider diamond sphere attains a speed 99.99999(23 times)% times speed of light, speed of the fastest travelling meteorite ever observed by mankind . The 'OH-MY-GOD' Particle,the OMG particle is basically a proton from space which ploughed the atmosphere over UTAH ,in 1991. It moved so fast that no human eye can witness it's existence with naked eyes.This particle possessed the speed and energy that couldn't even be produced in LHC, large Hadron Collider, present in California. Several phenomena is detected several times a year, but, nobody understands how exactly they are produced. No modern computer was able to mathematically determine anyone trajectory , because mankind was not ready for that incident at that time.Although the proton star just passed by the surface of earth, what if it was to hit the Earth , HEADON!! Well letsanalyze. We considered the foreign particle to be a diamond meteorite. So, let elaborate the fact that its diameter is very large and is travelling at a speed somewhere near to speed of light and very accurately to the speed of OMG particle. At this speed the carbon inside the meteorite go wild and crazy cause the kinetic energy so developed inside them will range somewhere close to 1.24 trillion electron-Volts . This meteorite when hits the Earth ,creates a big deep conical cavity into earth's Lithosphere, through which one could even see molten Magma! Now this collision will release energy equivalent to 50 times as that of CHIXULUB Asteroid (Mexico) that wiped out Dinosaurs from existence. The same fate arrives for the humanity.

This might put an end but it ain't enough! But , why risking it. Lets speed-up our diamond ball to a velocity very close to that so speed of light. Now every carbon atom carries around 25 trillion eV. This disturbance will push Earth's crust with enough energy in order to melt it completely in few hours! This impact will be huge. the heat developed due to it will cause the stone to disperse at 0.99 speed of light.

Here Relativistic effects begins to act, the link that holds the Earth as a sphere of mass, completely fails. Our diamond meteorite is no longer a meteorite, it a bunch of carbon atoms moving so fast that Lorentz contraption flattens the sphere into a… dosa you may say. Each carbon atom possess huge amounts of energy but its moving so fast that air collision becomes

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ISSN:0971-1260
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nearly negligible On contact , A cloud of expanding plasma with accompanying radiation diverges from entry , energy pulsated outwards. Within 40 ms , the far side of the planet forms a glowing cloud . The plasma and the cascades formed due to collision spreads through the planet and the planet starts glowing brighter than the sun. The Earth, by now , may have been knocked out to some other orbit , but it doesn't matter now , our earth is no more.Earth explodes in the form of expanding plasma cloud, energy jet will flow into the space in the direction of impact, sun almost chokes due to dust and other planet's surface will shine brilliantly due to incredibly high- energy plasma Shockwave.Nothing is left now, abundant dust, high energy shockwaves and no sign of life in the near planetary circles. we came this far, just on a hypothetical journey . The truth remains closed and is yet to get unravel by us.

Physics is fascinating ……isn't it.

2.3 Conclusion

Now, lets not think about what we can't analyse. lets see what we are capable of. WE as a human have developed enough technologies ,not just to meet our daily life needs, but, also to enhance the quality of life we will bear in future. The fast paced communication technology and aerospace engineering enhancements have given human life new wings, wings to cherish humanity with utmost satisfaction! .We have modern day satellites, monitoring towers, analytic teams and highly trained individuals. We create the future ,We secure our future, parallelly. We live in an era where just talking in words wont influence anyone, We believe in data , with maximum accuracy and minimum error. Talking of accuracy ,its not that easy to predict the trajectory of a random asteroid ,neither its that hard to ignore its consideration . But, what keeps us motivated in unravelling the secrets of this Earth and go beyond the reach of naked eyes.Now this enthusiasm has led to the discovery of EXOPLANETS. AN Exoplanet is a planet outside of the known solar system. Habitable Exoplanets Catalog (HEC), estimates the habitability on these planets.
In astronomy and astrobiology, the circumstellar habitable zone is the region around a star where a planet with sufficient atmospheric pressure can maintain liquid water on its surface. A potentially habitable planet implies a terrestrial planet within the circumstellar habitable zone and with conditions roughly comparable to those of Eart. Thus potentially favorable to Earth-like life. However, the question of what makes a planet habitable is much more complex than having a planet located at the right distance from its host star so that water can be liquid on its surface: various geophysical and geodynamical aspects, the radiation, and the host star's plasma environment can influence the evolution of planets and life, if it originated.there could be as many as 40 billion Earth-sized planets orbiting in the habitable zones of sun like stars and Red Dwarfs in the Milky way. 11 billion of which may be orbiting Sun-like stars.the exoplanets KEPLER-62f, KEPLER 168f and KEPLER 442B were likely the best candidates for being potentially habitable. These are at a distance of 1,200, 490 and 1,120 Light years away, respectively. Of these, Kepler-186f is similar in size to Earth with a 1.2-Earth-radius measure and it is located towards the outer edge of the habitable zone around its red dwarf. HD 85512 D was initially estimated to be potentially habitable, but updated models for the boundaries of the habitable zone placed the

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ISSN:0971-1260
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planet within the HZ,and it is now considered non-habitable.

2.4.The Forbidden Plan

KEPLER 69c has gone through a similar process: though initially estimated to be potentially habitable, it was quickly realized that the planet is more likely to be similar to Venus,and is thus no longer considered habitable.

Similarly, TAU CETI F was initially considered potentially habitable, but the improved model of the circumstellar habitable zone places the planet exterior to the outer limits of habitability, so it is now considered non-habitable.

KEPLER 438Z was also initially considered potentially habitable, with highest ESI of 0.88; however, it was later found to be a subject of powerful flares that can strip a planet of its atmosphere, so it is now considered non-habitable.

KOI 1686.01 was also considered a potentially habitable exoplanet after its detection in 2011, until proven a false positive by NASA in 2015.

3.0 THE FINAL CONCLUSION

The question we all had in our minds abut human capabilities and man's potential to overcome any type of future scenario. might have a conclusion by now. We see, although there's a whole lot of people in this world,just sitting around on the couches ,laying near the bed, and do all sort of self-fulfilled things. Where on the other hands there's a whole lot of people, we call them scientists ,who don't even care about there self needs and develop the feeling of carelessness to find an answer for the most simple question. i.e. "WHAT WILL HAPPEN IF",this single question don't let them sleep peacefully ,They sacrifice their everyday so that one coming future HUMANITY will live peacefully and unquestioned about " WHAT WILL HAPPEN IF".

The basic aim behind Astrobiology id toExplore the range and complexity of societal issues related to how life begins and evolves, to Understand how astrobiology research relates to the significance and meaning of life, to Explore the relations of humans with Earth, its life and environments, to Explore the potential relationships of humans with "other" worlds and types of life.Consider life's collective future—for humans and other life, on Earth and beyond.
Whereas Astrophysicists seek to understand the universe and our place in it. At NASA, the goals of astrophysics are "to discover how the universe works, explore how it began and evolved, and search for life on planets around other stars,While Astronomy is one of the oldest sciences, theoretical astrophysics began with Isaac Newton .Prior to Newton. astronomers described the motions of heavenly bodies using complex mathematical models without a physical basis. Newton showed that a single theory simultaneously explains the orbits of moons and planets in space and the trajectory of a cannonball on Earth. This added to the body of evidence for the (then) startling conclusion that the heavens and Earth are subject to the same physical laws.The near future will be dominated by several missions. Currently in development, with especially broad scientific utility, is the James Webb Space Telescope. Also in work are detectors for ESA's Euclid mission and hardware for JAXA's XRISM (X-Ray Imaging and Spectroscopy) to provide breakthroughs in the study of structure formation of the universe. outflows from galaxy nuclei, and dark matter.

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ISSN:0971-1260
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We have not achieved it all, neither we achieved nothing. Science is a whole matter of uncertainties, we dig it deep, it goes deeper instead, there's no end to it. We camealog on a long journey just on a hypothesis and we proved what's our plan B is, if nothing goes according to the plan A.

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