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I hereby suggest that an *Electron gun*, might be able to accomplish the task of diverting the orbit of a large asteroid, as well as the smaller ones, far enough to miss the earth. Consider the following:

Possible Method to COUNTER Asteroid Danger(s)

The suggestions, that perhaps *Lasers* may be used to deflect the collision-orbit and/or assorted particles, (prox 100,000 +or -) in orbit around the Earth, is addressed herein!! It has been theorized that *Photons*, (the particle/wave), of which they are composed, purportedly, have *NO* mass, (of which I disagree).

ARGUMENT #1: If a *Photon* has *NO* mass, then directing the laser-beam onto the asteroid, would be much like a butterfly landing on an elephant. However, if a *trillion* butterflies land on an elephant, surely the weight of that elephant would be more than before!

According to a paper authored by *John K. Harms*, copyright 2006, he has theorized that a *NEUTRINO* may be the opposite particle of a *PHOTON*, possibly a *PHOTON "Hole"*! It has been proven that a *NEUTRINO DOES* have mass! Then therefore, the *PHOTON MUST have mass!*

I **believe also**, that a *Photon DOES* have mass, however *infinitesimal*, for another reason. It has been shown, that *LASERS can* do work! By traveling at, or nearly the speed of light, such *boosts* that *mini, mini, minute* weight, *hundreds*, if **NOT thousands** of times heavier, [*depending on the actual speed*], according to $E = MC^2$. Therefore, a *Photon (light), DOES* have mass!

ARGUMENT #2

The *Electron Gun* is the prime candidate to change the orbit, or *neutralize* the size or weight, of any given *ASTEROID* (more later on herein)! The *Electron Gun* produces *PROTONS*, as well as *Electrons*, by a process designated as *Thermionic Emission*. Basically it was the *Electrons*, which produced a picture on the T.V. sets.

Originally, the *Electron Gun* was *purposely* mis-aligned, and thus called a "*bent*" gun! A spring-loaded device, containing a magnet, was fitted around the neck of the T.V. Tube. This device was called an *ION-TRAP (PROTONS)* (are a part of the *ION* class). The *Ion-trap* was moved back and forth, while being rotated, over the area, which contained the first elements of the gun, **UNTIL** the stream of *ELECTRONS*, impacted directly, (produced a picture), **ON**

the fluorescent screen of the Cathode Ray Tube (CRT).

NOTE: The title "*ION-TRAP*", was a misnomer. It had **LITTLE** effect on *IONS* or *PROTONS*. It had a **great effect** on the *ELECTRONS*, because the strength of the magnet was strong enough to bend the stream of *ELECTRONS*, but **NOT** the *IONS* nor the *PROTONS*!

Later on, with the advent of aluminizing, (vaporizing a small slug of aluminum), while in a temporary vacuum condition), resulted in placing an aluminum shield across the entire phosphor screen. This process was called SPUTTERING/ALUMINIZING.

That shield allowed the *electron-gun* to be built in a straight alignment, (now termed as a "**straight gun**"), so that an *ION-TRAP* was **NO** longer required!

Movement of the *electrons* was then accomplished by the *electron-gun* itself, along with a powerful magnetic field by a Yoke, which was fitted around the neck, while the *Protons/Ions* were dissipated/absorbed by the aluminum shield!

The *IONS/PROTON'S* mass is approximately **1,836** times greater than an *ELECTRON*. AN *ELECTRON'S* mass is equal to **(5,000)** Neutrinos. A *Photon* has the *same mass as a Neutrino*. Therefore, a *PROTON* has the **MASS** of **(9,180,000)** *NEUTRINOS/ PHOTONS*.

NOTE: The important part of *Cathode-Ray Technology*, taught that when you increase the voltages to the *Electron-gun*, you also increased the power of the *Electron Stream* in the Television sets. Therefore, **(by law)**, T.V. sets could **NOT** exceed **25,000** volts of *ANODE* voltage. That was near the beginning of generating **X_RAYS**!

This, now sets the stage, for the use of a *Cathode-Ray Gun* being used, to alter the orbit of any rogue *ASTEROID(s)*, which might threaten the existence of life, on Earth! The *Electron Gun*, could be fashioned to be built (suggestion) at **(100)** feet in length, with all the parts of controlling/elements/voltages, a commensurate size.

NOTE: **NO** glass bulb or any other material would be needed as an envelope, because the vacuum of space, will do very nicely! Let us proceed with our task. Consider an *ANODE* voltage of **(250,000)** volts, with other applied voltages increased accordingly! **NOTE:** Normally-applied voltages for a typical *Electron Gun* are:

Filament: **6.3 V AC @ 600 MA**;
Cathode **-5 V** ;
(G1) **10 to 30 volts** ;
(G2) **250 to 400 V** ;
Focus Ring **0 to 300 V** ;
Anode/Spit-anode **8,000/20,000 Volts**.

We will **NO longer** call it an *Electron-Gun*. Now, it shall be called a "*PROTON Gun*", because the *PROTONS* are going to do the work. We will position our *PROTON GUN*, an appropriate distance away, dependent on the size and/or rotation of the *ASTEROID*.

Let us start with a **(100)** yard distance, from a **50 ft.** diameter *ASTEROID*, which is rotating. The *PROTON GUN* may be "**fired**", (activated), in a steady stream, or in a synchronized manner, so that one particular area of the *ASTEROID*, will receive the most *PROTON* bombardment!

This will put pressure on the asteroid to move away from the stream of *PROTONS*, in the same direction, as the beam is directed from the *PROTON Stream*! "*For every action, there is an equal and opposite reaction*"! (Isaac Newton's 3rd law of Motion). This then, should result in the *ASTEROID* being nudged enough to change orbit!

An *ASTEROID*, which is **NOT** rotating, will receive a steady stream of *PROTON* bombardment, for **(2)** reasons.

The **1st**, as stated, ... to put pressure on the *ASTEROID* to change its orbit. The **(2nd)**, is to heat up the *ASTEROID*, in one particular spot, (especially if it contains a lot of metal).

In this case, an ancillary, *beneficial action*, takes place. When you heat a metal in a vacuum, that metal will first melt and then as it gets hotter, go into a vapor-like cloud. It will then look for a cooler place, to solidify again, as a continuous piece of metal. **NOTE:** This process, routinely done in vacuum technology, is known as *SPUTTERING/ALUMINIZING*. It was normally done, in the manufacture of *T.V. Tubes*, because all **CRT's** started to employ "*straight guns*". Since there is **NO** envelope, **NOR** place to solidify, the atoms will continue to disperse forever, into the void. Sounds like *Buck Rogers Disintegrator Gun* or *Flash Gordon's BLASTER!*

Vaporizing/solidifying the aluminum shield over the screen, slows down the “burning” of the fluorescent screen, **which** otherwise would present an unwelcome, **never-disappearing**, colored screen, (in a black & white picture tube). This would be the resultant of the heavy bombardment, from the “**PROTON/ELECTRON GUN**”.

The **ELECTRON/PROTON** stream is powerful enough to penetrate the Aluminum screen initially, but **NOT** powerful enough to bounce back out. **NOTE:** By putting an aluminum shield over the Phosphor coating, such causes almost all the light generated from the phosphor particles, to be sent forward, (**toward the viewer**), thus providing a brighter picture!

In a **CRT**, when the **electron beam** is focused and the sweep circuits are **not** used, the **electron beam** would not only burn through the aluminum, but also burn a hole in the glass itself!

The purpose of this explanation was to show, that it is possible to **decrease** the weight/bulk of an **ASTEROID**. This **serendipitous** side--effect makes the pressure exerted by the **PROTON** stream, even **more effective/meaningful!**

Argument # 3

Some people, have put forth the theory, that the optimum use, (for getting rid of the smaller particles), would be in a “**search & destroy**” mode! The “**Duck Hunter**” paradigm, (waiting for a particle to come into your purview, and then destroying it/them).

In my view, even after **100** years, you could **NOT** be sure all asteroids (estimated at more than **100,000 +** pieces), would still **NOT** present a danger. However, even the smallest ones would present a danger to any man-made earth-orbiting satellite. The “**Duck Hunter**” would be an **exercise in futility!**

The method, as suggest herein, employing the use of an **Electron-gun Proton beam**, negates any possible result of the “**Kessler Syndrome**”, (as other people have put forth), the act of destroying the orbiting particle, itself creates even more debris)!

Consider the next possible remedy also!

1st Select the largest ones (possible colossal earth-devastating ones), [such as **Apophis**] and neutralize those first.

2nd Determine in which direction **MOST** of the particles of all the orbiting pieces are going. Select particles, (again by largest to smallest), going in the opposite direction, or criss-crossing, the main body of particles and move them out of Earth's orbit, (by Proton Beam), emanating from the proton gun!

CONCLUSION

(1) PROTON has the MASS of **(9,180,000) PHOTONS**, (the **Photon** is the energy source of a **LASER**). Therefore, the use of a **PROTON/ELECTRON Gun**, has a far better chance, to alter the orbit of an errant **ASTEROID**, than a **LASER**.

BUT, consider **other** alternatives:

You could use a **nuclear bomb** to explode the **asteroid**, either changing the course of the asteroid, (**for every action, there is an equal and opposite reaction**), or blowing it up into smaller asteroids, and have an asteroid shower of **lesser lethality pieces**, than a mountain-size asteroid.

It has been argued, that even though the **asteroid WAS** blown up, the totality of the remaining pieces, would still have the destructive action of the **WHOLE** original **asteroid**, and that indeed would be correct **EXCEPT!....**

I **REJECT** this theory because of the following: The **asteroid**, (being in the vacuum of space and the **absence** of any gravitational fields) , on being blown up, (**into smaller pieces**), would fly apart **equally**, into **ALL** directions. Therefore, the majority of those pieces, would be deflected **away** from the Earth/Earth's orbit, and thus, could **NEVER**, impact the earth!

That action would **significantly reduce** the balance of the mass of the **Asteroid**, **IF...ANY**, which **COULD** still **impact** the Earth. **NOTE: The impact of any Asteroid, on another body is, dependent on its mass and speed!**

IF... ANY Even, whatever is left of the **Asteroid**, such will have then reduced the mass of the remaining pieces, such that many of the pieces would burn up in the atmosphere. These pieces, seen many, many times, (commonly called "shooting stars"), are readily apparent to the naked eye, on **ANY** clear, cloudless night! This action, would also effectively, **reduce the totality of the mass**, of the original **Asteroid**.

In the event, an explosion was able to blow the *Asteroid* into (2) large pieces, then in that event, **BOTH** pieces would completely ...**MISS**hitting the earth! That is because, being in a vacuum, away from the gravity of the earth, both pieces would continue to fly away from each other, (but **NEVER** impact the Earth).

NOTE: An *Asteroid*, believed responsible, [for wiping out the dinosaurs, some (65) Million years ago], was about (6.2) miles in diameter!

A more recent *Asteroid* strike, (June 30, 1908), called the *Tunguska Event*, tens of meters wide exploded in our atmosphere, (an air-burst), caused trees, up to (10) or more miles away, to be blown over, in a circular array! This writer believes that,

That *asteroid*, was composed mostly of ice, because **NO** trace of it, (in the center of the effected circle), was ever found!

April 13, 2009, Discovery News reporter Irene Klotz, cites NASA, (which maintains an "*Asteroid Watch*"), as reporting that an *Asteroid*, about the size of a (25)-story building, will approach the earth. This *Asteroid*, named "*Apophis*", will come within (18,000) miles of Earth, on this the first go-around, [It will be back].

Geo-stationary satellites, (unlike stars or other celestial objects), part of our **Global Network Communication System, (GPS) ALWAYS** appear in the same spot. They are continually orbiting at (22,300) miles! *Apophis will actually come closer, to Earth, than they are!! The topic of Asteroids, orbital debris, endangering life on Earth has been brought up more often lately, (2010) , than usual!*

You might consider multiple remedies, applied together, as discussed herein ...OR.... on orbiting debris or large bodies. If any *Asteroid* is large enough to provide a minimal amount of gravity), you may attach a rocket booster of some kind. This would provide enough energy to **NUDGE/induce** an orbital change, so that it would **MISS** hitting the Earth, **forever !!!**

I believe, that the *Proton Gun* may truly be used as a gun. As a matter of fact, initially, it would be used in a manner, **NOT** too different, than that

of a machine gun. That is because the mass of the *Proton*, is **(1,980,000)** times heavier than a **Photon**. Instantaneous result of an impact, with many small particles, will change the orbit of all those impacted pieces, so that they would fly off.... (immediately, to deep space)!

When most, if **NOT** all, the small particles/debris have been destroyed/de-orbited, (into outer space), the *Proton Gun* could be programmed to de-orbit **NEW** pieces, as fast as they are *formed/detected!*

Yours truly,

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