

On the Propagation of Shadows in Space. On the Nature of Quantum Shadows and Negative Mass Based Propulsion

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Abstract: Shadows usually are not considered to propagate through Space, after all, what we call a Shadow is the absence of Light, the absence of something entails the lack of travel rather than the contrary. During my ruminations upon the phenomena of a Lunar Eclipse, the notion of a Shadow extending such a vast distance to the Moon piqued my interest, what follows is some considerations upon the movement of Shadows across such a distance. Some theoretical concerns regarding the nature of Quantum Shadows and their relation to Negative Mass are considered.

In covering this topic, this paper realizes the propagation of Shadows in Space and considers them a real entity, as will be explained below. The generation of Shadows in Space occurs in reverse time and they represent something negative, or the lack thereof-namely Light- making for an interesting topic for how can something that is nonexistent be generated in the same Universe as something which is existent?

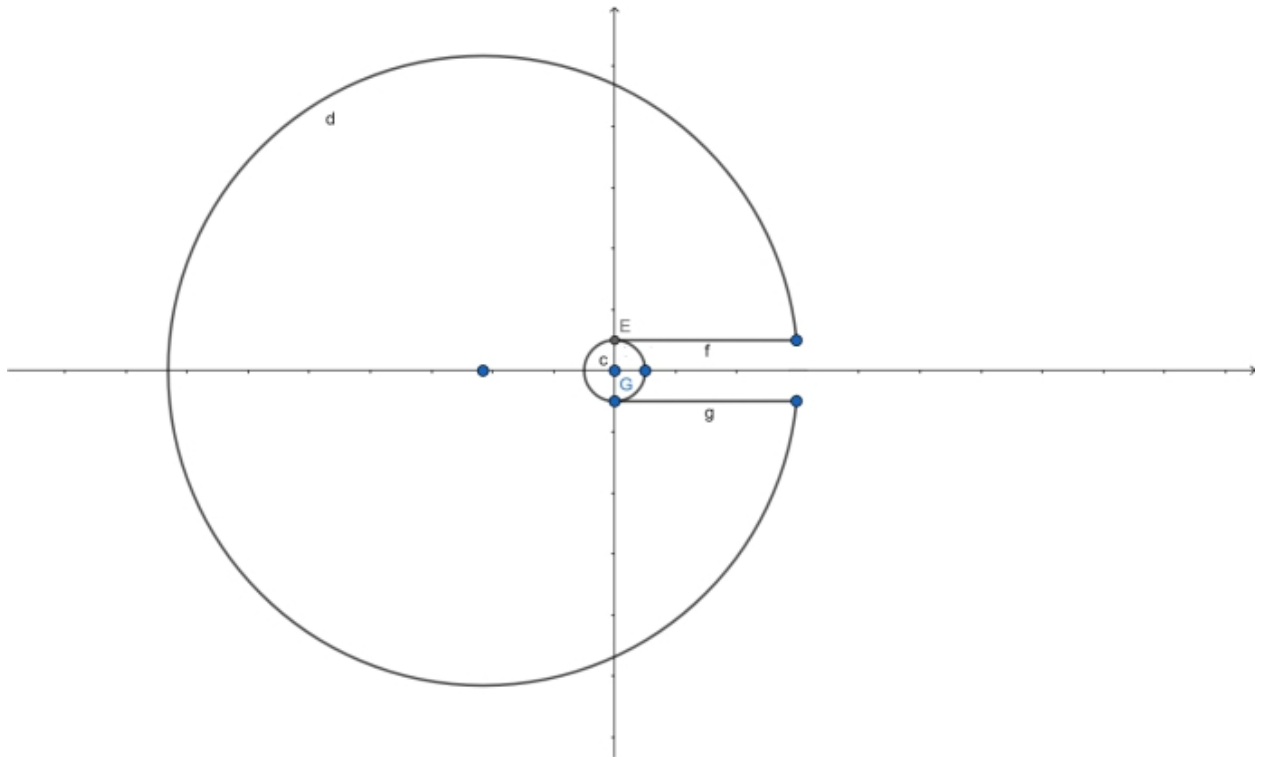


Fig 1: Circle *d* represents a field of an undetermined amount of Light from the Sun illuminating a hypothetical Planet or Moon located at an unknown location in Space, marked by Circle *c*. Lines *g* and *f* mark the width of the Shadow which extends to a termination zone located, say, 3 IAU away from the hypothetical illuminated Celestial Body. This image represents a fully formed Shadow.

What I call the 'termination zone' is the interpreted region of the field of emitted Light caused by the opaque celestial body. The termination zone is, of course, the same width as the diameter of the celestial body, the length of the Shadow, as represented here is 3 IAU; 3 IAU (1 being equal to 500c) is three times the distance from the Earth to the Sun. The generated Shadow may very well be infinite, however, for this paper a distance is added in hopes to minimize something which can potentially be infinite into something finite and measurable to where we can extract useful knowledge.

It is well known that Shadows of objects on the Surface of Earth are finite, their length is determined by the angle of the Sun, their dimensions determined by the dimensions of the opaque body, shadows of this sort are swift in their formation and hardly cause an observer to contemplate their being. Because these objects reside close to a surface the Shadow has no freedom to project itself from the opaque body, quite contrary to an object residing in the air. An airborne object within the atmosphere projects a Shadow onto the surface of the Earth, due to their being airborne, the Shadow must travel before reaching the Surface of the Earth.

Depending on the distance from the object to the surface the Shadow will be projected upon, the Shadow may appear larger or smaller than the opaque body. We see, in the case of a projected Shadow from high up in the atmosphere, the Shadow scarcely reaches the ground as it is washed out by the power of the illuminative field of the Sun.



A



B

Fig 2: A is a bird in flight, its Shadow travels to the surface. B shows a stationary bird on the ground, the Shadow he is considered not to travel.

This paper considers Shadows as real entities not only for Shadows generated in Space but also for Shadows generated on Earth.

- 1) A Shadow's appearance is distinct from anything else around them.
- 2) Shadows have a real location in Space and can be measured, their dimensions change depending on the proximity to the opaque body.
- 3) Shadows travel.

Based on the reasons above, a Shadow is considered a real entity existent within the Space-time continuum. Figure 1 outlines our Space Shadow; from this we can extract its speed. It is well known Light travels at 299,792,458 m/s and given that an opaque body interrupts a certain amount of light, we can conclude that shadows travel at *negative* light speed.

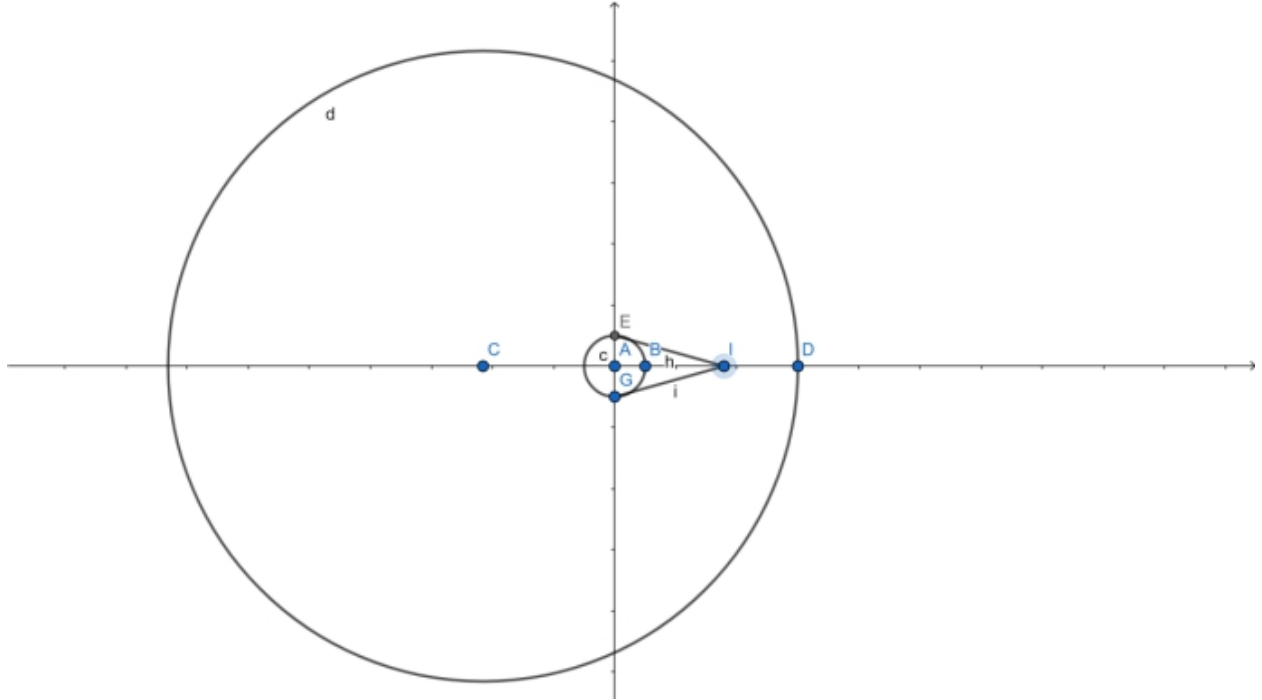


Fig 3: The triangle from Circle c represents the Shadow during its creation, I say 'creation' as the Shadow is still growing and traveling to the termination zone indicating that it has not yet fully matured into its final form.

The Shadow in Figure 3 is still forming, it is moving away from the opaque body at negative the Speed of Light, it is not moving at positive Speed of Light for this reason; the Shadow obscures all travel of Light in a defined area, the Shadow represents the absence of Light and thus its Speed is -299,792,458 m/s. The distance this Shadow must travel is equal to 3 IAU or 449,688,687,000 meters, the equation is $449,688,687,000 / -299,792,458 \text{ m/s} = -1,500\text{s}$. Thus, the Shadow also appears to move *backwards* in Time, another interesting thing arises if we consider the Light to have mass (as some speculate) the Shadow will have *negative mass*. The fact that the Shadow gives us a reversal of everyday parameters indicates a Symmetrical Universe.

Given this ease at which we can come to see the real presence of Shadows in Space, it may as well be possible to also see their presence in the Quantum World. The photoelectric effect is

a well-known phenomenon where Light, as Photon Quanta, interacts with electrons thereby giving them the necessary energy to be freed from their usual location which effectively launches them to and from. When the electron is dislodged from its location it leaves behind a 'empty' space called an 'electron hole'^[4], this vacant area is considered as a positively charged electron quasi-particle as it behaves like regular electron, it can be manipulated by electromagnetic fields and acts opposite of an electron.

From what we know of Shadows, they are created by Light, the illumination of an electron with light creates an electron hole which is its Shadow and if this electron hole has the same properties as our celestial Shadow, then the electron hole quasi-particle *is moving backwards in time with negative mass*. The reason why electron holes have negative mass is because they are the absence of an electrons positive mass, even though holes behave the same as a normal electron.

Electrons occupy space within Matter, the Matter to which they reside in is structured the way it is only because of the existence of these electrons, if all electrons were removed, the Matter would 'know' such a vacancy exists. That is to say, the nucleus of the atomic structure would be generating a *positive* electrostatic charge to 'attract' electrons to itself in order to regenerate its configuration, such an attraction of a large conglomerate of electrons would induce a force of equal magnitude. Electrons, having positive mass, are separated from their electron hole counterparts, they are arranged in such a way as to accelerate in a gravitational field to bind with a negative mass electron holes, upon occupying the electron hole vacancies, the electrons transfer their momentum and energy to the Matter as a whole thereby propelling it.

Electron hole quasi-particles, our Shadows, have negative speed, negative mass and travel in negative time, thus the acceleration of their opposite charges, i.e. electrons, would create a backwards momentum upon binding with said electron holes, if more momentum is introduced into a negative system, that system has to compensate the extra energy in accordance with its negativity which should, theoretically, create an anti-newton law. Though to the Matter, the direction of the momentum is neither forward nor backward but rather a mere dissipation of the extra energy in a way that is only possible, i.e. through movement.

This propulsion effect is the basis for makings of the so-called Diametric Drive: could it be that the feasibility for this type of propulsion technology is within reach? It should be noted that I had no idea such an idea was already convinced, I was researching 'negative mass' due to the possible implications a Quantum Shadow could create, and it turns out the concept of negative mass is crucial to create future propulsion methods.

The equation is modified to show electron mass, or M_e , we are keeping the negative mass stationary while accelerating the positive mass.

$$a_{+m} \frac{G - (+m_g)}{2d^2}$$

And,

$$a_{-m} \frac{G - (-m_g)}{2d^2}$$

The electrons could also be accelerated by electromagnetic fields as well making the system more efficient, and since we are dealing with quantum effects, the constant G would be of no use, nor would it really matter as we can use several methods to accelerate electrons, not to mention the fact that negative mass has no response to gravity whatsoever.

The experiment set up would look something like this: Suitable Matter, most likely in a gas form or some sort of condensate, is illuminated with lasers strong enough to release the electron from the confines of their orbital, these electrons are electromagnetically captured and accelerated to light speed, or close to it, then projected back upon the Matter to where they were released from. This required technology for this experiment is already developed, it is basically a reiteration of the already known photoelectric effect present in solar panels, the argument here that instead of using these electrons for human electricity, it is projected back upon the matter to power its own propulsion, albeit in a more controlled and clean environment. If an atomic nucleus remains undisturbed while its electrons are jettisoned from their orbital, the presence of the electron hole indicates the power of absorbing those electrons back. If such a thing is not possible with the same material with those emitted the electrons, a material with the capacity to absorb such fast moving electrons would be used. At any rate, it remains unknown if it is even possible for electrons to rebind with their host matter.

[Gravity is uniform acceleration, electromagnetism providing uniform acceleration on electrons constitute quantum gravity or an imitation of it. Gravity is just the acceleration of weight over time, an object moving at the gravitational constant on Earth would take roughly 11 year to accelerate to the Speed of Light.)