The bending of light near massive objects is not due to their mass, but due to their size: diffraction - Black holes are objects with cosmic size.

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Abstract

The bending of light near massive objects is not due to Newton's gravitational field or Einstein's curvature of space time, according to the theory being proposed in this paper. It is caused by the phenomenon of diffraction of light due to the huge ***size*** of the cosmic objects. The size of the object is so huge that its surface curvature is so small as not to allow a light beam to escape. The light beam can easily diffract around the surface of the object because the surface curvature is very small due to the its huge size. Therefore, the observed bending of light beams by the sun (taken as an evidence to confirm the general theory of relativity) is not due to the Newtonian gravitational field of the sun or Einstein's space –time curvature. Light scattered from the huge size object (the black-hole) and light passing by it are all diffracted around the surface. The size of the black-hole object is so enormous that light cannot get sufficiently far from it to escape its diffraction effect ; this means that the black hole has significant effect even on light rays very far away from it due to its cosmic size. Phenomena such as gravitational lensing can equally be explained by the theory presented in this paper.

Introduction

The two well accepted theories to explain the bending of light near massive objects such as the sun are those based on Newtonian gravity and Einstein's space curvature. In this paper will be presented an alternative explanation. First arguments against the two accepted explanations will be presented briefly and then the alternative theory.

Discussions

Newton's law states that there is a gravitational force of attraction between two objects *with masses*. This force is given by

$$F = G\,M\,m/r^2 = ma \quad \Longrightarrow \quad a = G\,M\,/r^2$$

Newton's law is one of the fundamental laws of nature. Its statement is clear that gravitational attractive force always exists between two objects *with masses*.
Can we use this law to explain the bending of light near massive objects?

Since the 'm' term exists on both sides of the equation above, we get acceleration independent of mass. But acceleration of what? It is acceleration of an object with mass, in its literal meaning. But can we extend this to say that light is bent by gravitation? Does it give sense to say that light has mass? Zero mass? The concept of mass energy emerged with the formulation of special theory of relativity; I have attempted to invalidate in my other paper (viXra:1210.0182) (http://vixra.org/abs/1210.0182) Einstein's postulate that the speed of light is constant for all observers by showing that it is constant only relative to its source. If the proposals in that paper are correct, then mass and energy are not equivalent , so it doesn't give sense to talk about zero 'rest mass' of a photon. So Newton's law of gravitation applies only to particles, not to waves.

Therefore an alternative explanation will be presented below.

The bending (diffraction) of light around an object directly varies with *size* of the object . The bigger the size the more the bending. This is the phenomenon of diffraction. The bigger the cosmic object the less the curvature of its surface so that light can easily diffract around and even never be able to escape.

Light can easily escape from the surface of objects of so small size that the curvature of their surface high, so that the light cannot diffract (follow the surface) around sufficiently, so it will escape easily. Figure 1 illustrates these ideas.

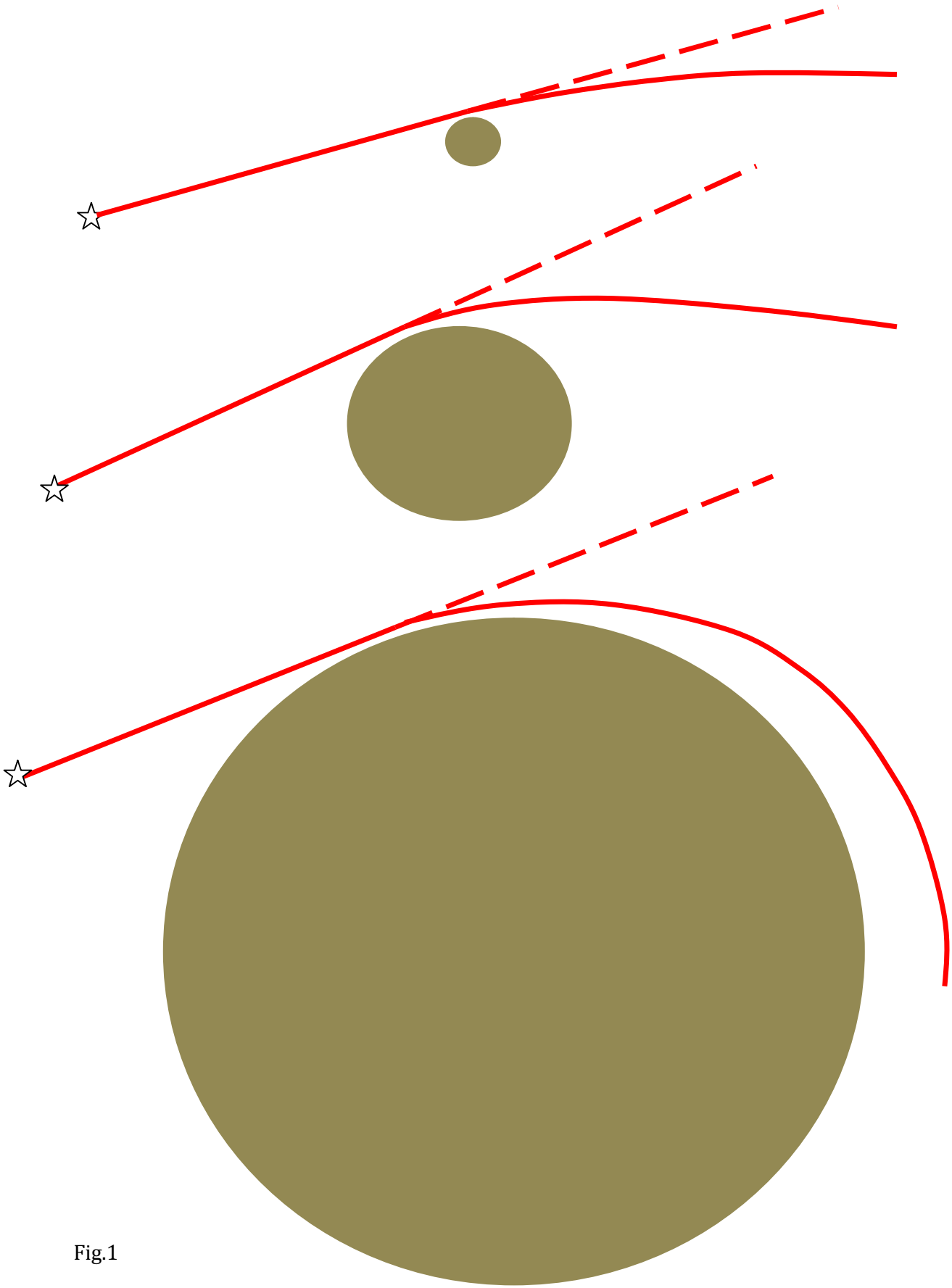

Fig.1

Black holes are objects with cosmic *size*.

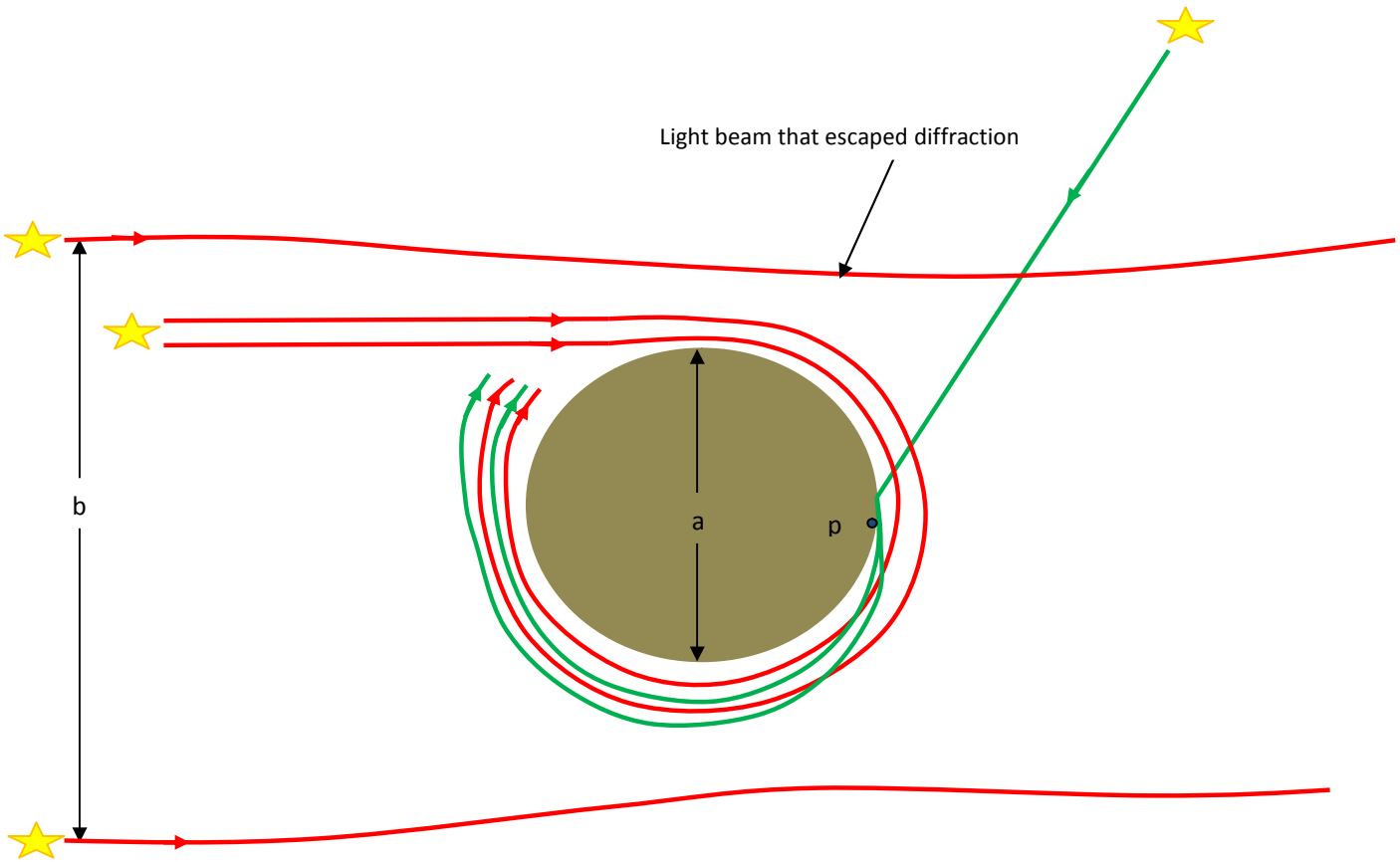

Fig.2

Green : scattered light from surface
Red: light beams passing by the black-hole object and bent backwards in curvature.
In the figure 'a' is the size of the black-hole object, and 'b' is the size of the black-hole. In the figure above the relative size of the black-hole object and the black-hole is exaggerated.

Black holes are objects of so huge *size* that no light can escape due to the very small surface curvature causing light to easily diffract around its surface. In the figure above, it is shown that not only light scattering from the surface is diffracted back, but also all light rays passing near by the cosmic object will be bent in curvature around the object.

On my other paper,

"Modified Huygens' Principle, diffraction and non-rectilinear (spiral) propagation of electromagnetic waves. *Diffraction doesn't depend on frequency but on radiation pattern. Only waves from a perfectly isotropic radiator travel in a straight path!* " http://vixra.org/abs/1211.0010

I have explained a theory of diffraction and propagation of light in more detail. According to the theory presented in that paper, the phenomenon of diffraction applies not only to light/EM waves encountering obstacles; it also explains why light scattering from the surface of the black-hole object will be diffracted back around the surface. The explanation is that light (or any electromagnetic wave) always bends towards the side with less light intensity. In figure 2, if we consider point 'p', close to the point of scattering, we can figure out that the intensity of light waves, on the surface side, is less than that on the 'sky' side. Therefore, that light beam will always diffract towards the surface, 'pulling' all the light beams above with it towards the surface. For lights that scatter back at nearly ninety degrees to the surface, according to the theory presented in that paper, the light beam will be spread in spiral paths so that it will no more be at vertical with the surface to escape diffraction. We assume the sun and the stars are nearly isotropic radiators, but as the light beams scatter back from the surface of the black-hole object, they become non-isotropic (according to Huygens' principle, points on the wave front are also sources), so that they will be spread into 'spiral cones', so that they will no more be vertical to the surface and thus diffracting around the surface. Only light or electromagnetic wave from a perfectly isotropic radiator can travel in straight line. In free space, electromagnetic wave (light) from an isotropic radiator travels in the most straight path; however, isotropic light will also be the most diffracted when there is an obstacle.

For additional explanations read the whole paper.

Conclusion

To say that light is attracted by gravity doesn't give sense. Any theory which cannot be intuitively understood is probably not a good theory. Intuition is the light we use to search for the mysteries of the universe. Mathematical manipulations should only come after intuition. The theory that light is attracted by gravity is not intuitive and it is only a result of mathematical manipulation of Newton's equations. The theory presented in this paper is intuitive and is based on the well understood and established phenomenon of diffraction. The special and general theories of relativity are based on the constancy of the speed of light, which I have proposed to be relative (not absolute), in my other paper[1].

References

1. Corrections to Maxwell's equations-Invalidating the theory of relativity?! http://vixra.org/abs/1210.0182

2. Modified Huygens' Principle and non-rectilinear (spiral) propagation of electromagnetic waves. *Diffraction doesn't depend on frequency but on radiation pattern. Only waves from a perfectly isotropic radiator travel in a straight path!* : http://vixra.org/abs/1211.0010