On the Formation of Close Binary Systems

Successes of Gravitomagnetism in the Cosmos

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Abstract

I discuss the approach of black holes based upon the improved theory of gravity originated by Oliver Heaviside [2] and find that the Schwarzschild metric is highly improbable to occur at all, if not impossible. I found that a spinning black hole is always emitting information at the poles [6]. Close binary stars containing a fast spinning star or black hole and a companion are found to emerge from only one original star. Close binary stars consisting of two fast spinning stars or black holes are found to be much more rarely.

Keywords: black hole, close binary star, fast spinning star, Oliver Heaviside.

1. Do "classical" Black Holes exist?

The Schwarzschild black hole is a theoretical solution of the general relativity theory: a spherical mass, so heavy that light couldn't escape, because the escape velocity of that mass would need to be greater than the speed of light.

But can such black holes exist? In reality, stars are made of dust from a nebula that conglomerated due to gravity. These nebulae contain matter that is not standing still during this contraction. Merely, like our Sun, the mass has some kinetic energy.

Based upon the genius work of Oliver Heaviside, it is clear [4] that like-oriented flows of matter will more attract than opposite-oriented flows, since matter-flows respond to similar laws as electromagnetism [2] [4]. By the segregation of velocities, there is a tendency to get rotational velocities, instead of purely randomly spread ones.

Even if these velocities are very small, the contraction of the masses, combined with the conservation of angular momentum, makes that the angular velocity dramatically increases with decreasing radii. A reduction of the radius by a factor 1000 increases the angular velocity with a factor 1,000,000.

Hence, it is clear that the least velocity segregation in the original nebula will result in a star with a considerable angular velocity. And if the star's mass is sufficient, this might result in a heavy, collapsed star, whereof the spin even increases more dramatically, to a fast spinning black hole.

But there is more: when the gravitational characteristics of a rotating star are calculated, it appears that [11] the angular velocity accounts for an additional (but apparent) mass, that applies to it. In reality, there is an induced field that acts upon orbiting objects as if the star were heavier. So, even a relatively lightweight star can obtain, by a high angular velocity, nearly the same characteristics as a very heavy star [11].

2. Fast spinning stars.

From my former papers it is clear that fast spinning stars exist and will be able to partially never explode, whatever the rotation speed is [6]. This is due to the magnetic-like gravity field, comparable to the Kerr metric [8] of GRT that leads to the famous "event horizons" of fast spinning black holes.

In my paper [8], I found the equations for the forces inside the star, eq. (3.8) and (3.9).

When the star is sufficiently compressed, and gets a radius that is smaller than its compression radius R_C, the parts above the northern latitude of nearly 36°, and under the southern latitude of nearly 36° can explode [8]. Such explosions give typical bipolar explosions such as SN1987A, the Southern Crab Nebula and Eta Carinae.

Let us analyze the inside of the fast spinning star before the explosion. In my papers [5] [8], I have found the inside accelerations of fast spinning stars due to gravity, the effect of angular inertia and the magnetic-like gravity.

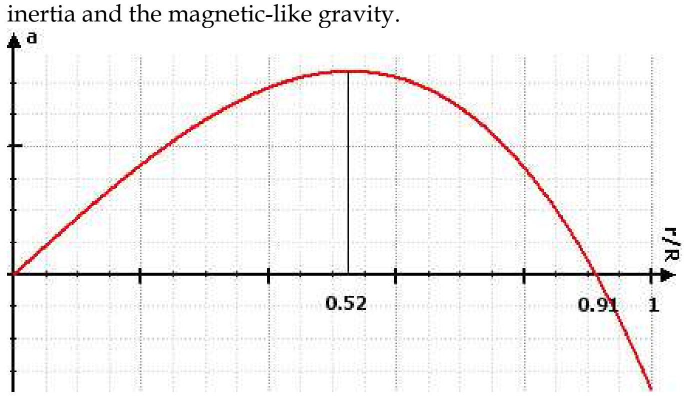

Fig.1. Graph of the resulting force inside the fast spinning star in the direction of the equatorial plane. In many cases, the maximal depression force is situated at about 52% of the star's radius. The maximal compression force is situated at the equatorial surface.

The fig. 1 shows a graph of the resulting force inside the fast spinning star of radius *R* in the equatorial plane. A positive value means a depressing force and a negative means a compression force. In many cases of fast spinning stars whereof the radius is below the compression radius R_C , the maximal depression force is situated at about 52% of the star's radius. The maximal compression force is situated at the equatorial surface. And at about 91% of the radius, we get a zero pressure.

It is clear that the bending of the curve from nearly 52% up to the surface is totally ruled by compression. So, not only the last 9% of the radius contains compression, but half of the radius.

By analyzing the forces inside the star locally at all places, it appears that the force is nowhere as strong as at the 52% radius. The highest pressure is located at nearly 52% as well, and it is also at that place that a possible crush of atoms will occur, causing the formation of black hole candidates.

3. Formation of black hole and close binary system candidates.

Since the amplitude of the internal forces is maximal at nearly 52% in most of the fast spinning stars, it is also at that place that a collapse of atoms will occur, causing a chain reaction because of the local extreme high density that suddenly occur.

Important to notice is that in almost all cases, the sudden collapse will occur at one place only, situated eccentrically in the star. Since the star is a physical object, the pressures at 52% may vary a bit from place to place, and it is not so that the ring at 52% would collapse at the same instant. Instead, at the place of highest compression on that ring, the collapse will occur, if it exceeds the maximal allowable pressure upon atomic structures.

At that place, the collapsed matter coming from lower radii will have a velocity that is slower than the collapsed matter coming from the higher radii. This means that there is a gradient of velocities, corresponding to a certain angular momentum, which by the contraction due to the atom crush will cause a strongly increasing angular velocity.

The matter around the contracted unit still can be absorbed by it, and will increase the overall mass of the newborn fast spinning unit. But as we explained in an earlier paper [12], fast spinning stars don't absorb new matter easily, but when the magnetic part of gravity will have become strong, it rather will expel that excess of matter, and also maintain an accretion disk about it.

The fast spinning unit inside the original star will rather become a brand-new collapsed, fast spinning star, around which the remaining original matter will form a second unit, becoming a large companion. The matter closest to the new fast spinning star will form an accretion disk.

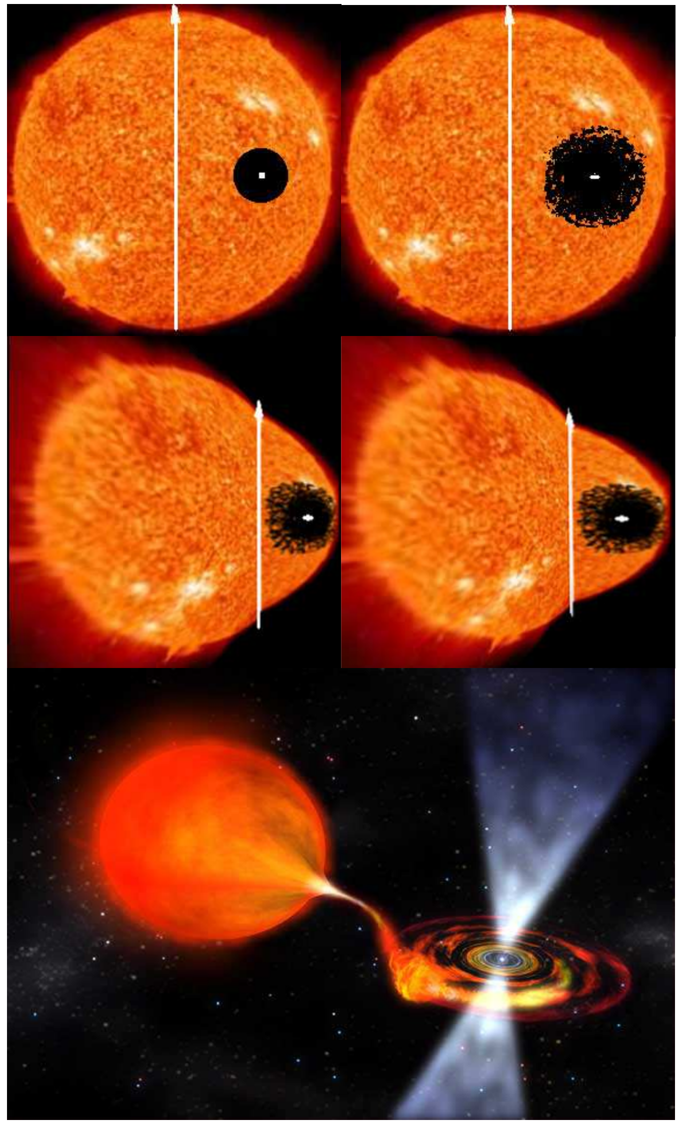

Fig.2. Schematic view of the evolution after a local collapse of atoms due to the internal pressure at 52% of the radius. Eventually, the original star has split up in a fast spinning collapsed unit and a large companion of the remaining available matter.

This explains why we find close binary stars quite easily, while it is not common to find star doublets in general. Binaries come out of only one star.

It is also possible, but very rare, that a matter collapse would occur simultaneously at two places on the 52% ring. That would generate two fast spinning units instead of one.

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