

Communications Regarding Multiple Black Holes

Stephen Crothers, June 14, 2013

To: Robin Barnard
Stephen Murray

Dear astrophysical scientists,

I refer to the article 'Black-hole bonanza discovered near Earth' by Clara Moskowitz, published online on 13 June 2013,

<http://www.foxnews.com/science/2013/06/13/trove-black-holes-discovered-in-andromeda-galaxy/>

wherein both of you are quoted:

"While we are excited to find so many black holes in Andromeda, we think it's just the tip of the iceberg," (Barnard)

"We are particularly excited to see so many black hole candidates this close to the center, because we expected to see them and have been searching for years," (Barnard)

"In the case of Andromeda, we have a bigger bulge and a bigger super-massive black hole than in the Milky Way, so we expect more smaller black holes are made there as well." (Murray)

Would you please reveal upon what solution to Einstein's field equations you both rely for your alleged multiple black holes and multiple black hole candidates? Please bear in mind the following simple facts:

(1) All alleged solutions to Einstein's field equations for the black hole pertain to a universe that is spatially infinite, is eternal, contains only one mass, is not expanding, and is asymptotically flat. However, the alleged hot big bang model pertains to a universe that is spatially finite (one case) or spatially infinite (in two different cases), of finite age, contains radiation and many masses (including many black holes some of which are claimed to be primordial), is expanding, and is not asymptotically flat. Thus the black hole and big bang cosmology contradict one another; they are mutually exclusive.

(2) There are no known solutions to Einstein's field equations for two or more masses and no existence theorem by which it can even be asserted that his field equations contain latent solutions for two or more masses.

Stephen Crothers: <http://vixra.org/abs/1306.0024>

Barnard, Robin, June 15, 2013

To: Stephen Crothers

Hi Stephen,
thank you for your interest. As you have noted, and is evident in your paper, the mathematics and

theory of black holes is extremely tricky and hard to understand; high school maths may be sufficient to understand the algebra, but high school physics is not enough to understand the physics. Luckily, our lack of understanding has no impact on the actual physics of the universe; there is no need to worry about flaws in field equations. I personally believe that it is futile to speculate what happens inside the event horizon, since the known laws of physics no longer apply.

Our black holes classifications are empirical, coming from measurements from known neutron-star binaries and black hole binaries in our Galaxy. They all exist in so-called X-ray binary systems.

X-ray binary systems consist of a compact object (either a neutron star or black hole) plus a companion star, in close orbit, so that matter is transferred from the companion star onto the compact star. They produce tremendous amounts of X-rays, and are powered by gravitational energy that is extracted from the material falling onto the compact star.

There are similar systems containing a white dwarf instead of a black hole or neutron star, but these release much less energy, even though white dwarves have similar masses to neutron stars. This is because white dwarves are many times larger than neutron stars, meaning that much less energy is extracted from the falling material before it hits the surface of the white dwarf.

The known black holes in our Galaxy have been "dynamically confirmed" by examining the orbits of their companion stars. Using Kepler's laws, we can get the total mass of both stars; if we can find the mass of the companion star, we can therefore find the mass of the compact star. Several of these binary systems have masses that exceed the limit for neutron star systems, regardless of equations of state. They also must be at least as compact as neutron stars, because they have similar power output from the same energy source. Therefore, they are more dense than neutron stars, and there is little else they can be except black holes.

As for how we make our classifications, I invite you to read the preprint of our upcoming paper using the following link: <http://arxiv.org/abs/1304.7780>.

Basically, we see a bunch of powerful, point-like X-ray sources in the region of the centre of Andromeda; these can be either neutron star binaries, black hole binaries, or background galaxies; the paper details how we make the distinctions.

Happy reading!
Robin

Stephen Crothers, June 16, 2013

Dear Robin Barnard,

Thank you for your reply to my email regarding your claim for the discovery of multiple black holes and/or black hole candidates in Andromeda (M31), as reported in the article 'Black-hole bonanza discovered near Earth', published online on 13 June 2013,

<http://www.foxnews.com/science/2013/06/13/trove-black-holes-discovered-in-andromeda-galaxy/>

Thanks also for the preprint of your paper with Garcia and Murray on this topic:
<http://arxiv.org/abs/1304.7780>

I have read your reply and your paper, but nowhere do you or your two colleagues justify or validate the notion of multiple black holes, multiple black hole candidates, or black hole binaries. You don't even specify the types of black holes or black hole candidates you claim to have found. You simply presume that nondescript multiple black holes and black hole binaries exist and on that presumption you and your colleagues interpret your observations as black holes and/or black hole candidates. Indeed, in your reply you said:

“Several of these binary systems have masses that exceed the limit for neutron star systems, regardless of equations of state. They also must be at least as compact as neutron stars, because they have similar power output from the same energy source. Therefore, they are more dense than neutron stars, and there is little else they can be except black holes.”

“Basically, we see a bunch of powerful, point-like X-ray sources in the region of the centre of Andromeda; these can be either neutron star binaries, black hole binaries, or background galaxies;”

They are certainly not black holes since all alleged solutions to Einstein's field equations for the black hole pertain to a universe that is spatially infinite, is eternal, contains only one mass, is not expanding, and is asymptotically flat. However, the alleged hot big bang model pertains to a universe that is spatially finite (one case) or spatially infinite (in two different cases), of finite age, contains radiation and many masses (including many black holes some of which are claimed to be primordial), is expanding, and is not asymptotically flat. Thus the black hole and big bang cosmology contradict one another; they are mutually exclusive.

You claim that, “there is no need to worry about flaws in field equations.”

That is simply not true, because the black hole itself is alleged to have been predicted by General Relativity via the Einstein field equations. The simplest type of black hole is allegedly obtained from the field equations $Ric = 0$, which is a spacetime that by mathematical construction contains no matter. Einstein's field equations are nonlinear and so the Principle of Superposition is invalid in General Relativity. Thus, if X and Y are separate solutions to Einstein's field equations, and 'a' and 'b' are scalars, then the linear combination $aX + bY$ is not a solution. This means that one cannot superpose any black hole solution upon any other black hole solution, different or not, or upon any big bang solution. It is just not possible to superpose spacetimes upon one another. Yet your claims amount to a linear combination of solutions (superposition) in violation of General Relativity to obtain many black holes, neutron stars, and other matter, and big bang, assuming you also maintain that one of the three alleged big bang solutions pertains. There are no known solutions to Einstein's field equations for two or more masses and no existence theorem by which it can even be asserted that his field equations contain latent solutions for two or more masses. Unless you or your colleagues can produce a solution to Einstein's field equations for many black holes or an existence theorem for such configurations of masses, then all talk of multiple black holes is merely wishful thinking. But that would be a tall order, knowing already that all alleged black hole solutions to Einstein's field equations pertain to a one mass universe that is asymptotically flat, spatially infinite, eternal, and not expanding, by definition.

In your reply you also say:

“high school maths may be sufficient to understand the algebra, but high school physics is not enough to understand the physics.”

This is also incorrect. It does not take much physics at all to understand that the black hole and big bang are mutually exclusive, as explained in my previous email and again above. Suppose now just two black holes (from what field equations do they come from?); each black hole disrupts the asymptotic flatness of the other black hole so that the spacetime between them is not asymptotically flat. In addition, each black hole encounters an alleged 'infinite curvature' at the singularity of the other black hole. Now consider the 2.5 million 'supermassive' black holes that NASA scientists have claimed to have found ('NASA's WISE Survey Uncover Millions of Black Holes' August 29, 2012, http://www.nasa.gov/home/hqnews/2012/aug/HQ_12-295_WISE_Black_Holes.html). None of the alleged black holes are in a spacetime that is asymptotically flat owing to the presence of the other black holes, and each of them encounters 2,499,999 'infinite' curvatures due to the other 2,499,999 alleged black holes. But all alleged black hole solutions to Einstein's field equations are defined in part by possession of a spacetime that is asymptotically flat, in a universe that is spatially infinite and not expanding. Multiple black holes and black hole binaries violate the very definition of the black hole. This does not require anything more than high school physics to understand. Indeed, it requires even less than high school physics to comprehend.

In your paper you say,

"We know of ~20 X-ray binaries with dynamically confirmed black hole (BH) accretors; these include 15 low mass X-ray binaries (LMXBs) and 3 high mass X-ray binaries (HMXBs) in the Milky way and Magellanic Clouds"

"We have identified 10 BHCs from their high luminosity low states to date."

"We have identified 26 new black hole candidates in the central region of M31, using their structure functions or luminosities to identify them as X-ray binaries, and their high luminosity hard state spectra to classify them as BHCs."

It is of note that you and your colleagues claim the finding of so many black holes, black hole binaries, and/or black hole candidates, when the very definition of the black hole excludes multiple black holes, and the black hole and big bang 'solutions' are mutually exclusive.

Yours faithfully,

Stephen J. Crothers

<http://vixra.org/abs/1306.0024>