Black Holes without paradoxes

Do equations have to break down with high gravity?
The solution is to take into account time dilation in the formulas for gravity. In previous publication Titled "Simply Theory" (there is a mistake in the formula for relativistic momentum, which should look like this:

$$p_r = \frac{mv}{\sqrt[2]{1 - \frac{v^2}{c^2}}}$$

Accidentally, I put the pattern on the momentum without the element. But if something goes past in the morning, strange things come out.
Returning to gravity and its problems.
When, as described in the "Simply Theory", we present the formula for kinetic energy:

$$E_k = \frac{mv^2}{2(1 - \frac{v^2}{c^2})}$$

And we will check how much is the escape speed we will get the formula:

$$\frac{mv^2}{2(1 - \frac{v^2}{c^2})} = \frac{GMm}{R^2}$$

And with it calculate the escape speed we get the formula:

$$\frac{v^2}{\sqrt[2]{1 - \frac{v^2}{c^2}}} = \frac{2GM}{R^2}$$

Therefore, the formula shows the higher gravity is, the higher speed is, but relativistic speed. Of course, the absolute speed of light remains the same. However, the measurement of this speed depends on the effect of dilatation on the observer making the measurement. The observer on the accelerated object by gravity will estimate his speed based on Newton's patterns.
At Black Holes, we also have a problem with acceleration, As we know, at some point, without taking into account time dilation, we exceed the speed of light, which is impossible at least for now. Let's check what happens when we take into account time dilation with acceleration patterns.
We forget, for obvious reasons, to speed up a small object and deal with the impact of the Black Hole.

$$a = \frac{GM}{R^2}$$

Time dilation must be included in the formula for acceleration:

$$a = \frac{s}{t^2}$$

After taking time dilation, we have the formula:

$$a = \frac{s}{t^2(1 - \frac{v^2}{c^2})}$$

Thus, the relativistic figure of the acceleration will have the form:

$$a_r = \frac{a}{(1 - \frac{v^2}{c^2})}$$

The formula shows that the acceleration recorded by an observer subjected to the Black Hole's gravity will "grow" to infinity. This is his subjective feeling because the dilation of time that affects him will cause that he will overcome an ever-greater path during the time he will be registering at that moment. This will cause that each time he will record the increase of acceleration up to infinity. However, the observer from outside will see that the object will accelerate less and faster (time dilation) and as it approaches the Black Hole and the speed of light its acceleration will drop to zero - in the event that it would only hypothetically reach the speed of light. It's acceleration will be zero.
If the observer on the object measured his acceleration (which is not possible because time would be zero for him at the moment), he would describe his acceleration as well as speed to the infinite.

$$a = a_r * \left(1 - \frac{v^2}{c^2}\right)$$

From this it follows that there is no Schwarzschild Radius because for the speed of relativistic light it will be ZERO.
In addition, as you can see from the designs, there will always be an escape speed for an object near the Black Hole. Of course this applies to objects with mass. As for the electromagnetic wave, it is a topic for a separate publication where I will deal with gravity and its effect on photons.