MAGNETIC FIELD OF SAGITTARIUS (Sgr A*) BLACK HOLE

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The event horizon experiment could proove Hawking-Bekenstein-Kerr theory
The mass of sagittarius black hole found , but we do not know the horizon surface and radius .

$M_{BH} = 8.22 \times 10^{36}$ kg

The radius of black hole arises from Hawking-Bekenstein-Kerr surface of horizon

So $R_{BH} = 1.1 \times 10^{10}$ m

You can see the way in my paper "Paradox of Hawking Theory"

At GSJ : http://gsjournal.net/Science-Journals-Papers/Author/743/Nikos,%20Alexandris

Using the algorythm of my book "modified Hawking field" page 55-56 we get the folowing values:

$Q = 4.4 \times 10^{28}$ Cb	$C = 190$ F	$I = 4.9 \times 10^{15}$ A	$B = 0.02$ Tesla
$E = 7.6 \times 10^{34}$ Joule	$g = 5.7 \times 10^{4}$ m/sec2	$L = 6200$ H	$T = 6.9 \times 10^{3}$ sec

$V = 2\pi R/T = 1 \times 10^{7}$ m/sec , 3% of speed of light or 0.03 C
This rotation function is appropriate for stars like sun .For this function rotation we use a few of six hypotheses .
For black hole is better to use the following function :

Velocity of surface

$V = \sqrt{2 g R} = 3.55 \times 10^{7}$ m/sec , 11% the speed of light or 0.11xC

$$V = \omega R , T = 1950 \text{ sec} , \text{period}$$

All equations arise without relativity .

Using the known mass of Sgr A* Black hole and the radius of Bekenstein-Hawking-Kerr function we can find the magnetic field of Black hole near the horizon with out relativity .It is using the same algorithm for Sun .

For Sun

the function is :
$$B = \frac{E}{I(2\pi R/5)^2} \quad (1)$$

Transformation of Lorenz-Laplace force
I = intensity of current , R = radius of Sun , R/5 is the radius of core of Sun , E = energy of Sun'currents , B/10 = surface magnetic field , 10 is the analogy of rotation between surface and core .The result for core is 25 Gauss and for surface 2.5 Gauss.
But it is better to change the function as following :

$$B = \frac{E}{I 2\pi R^2/5} \quad (2) , \text{ so the result is } 3.8 \text{ Gauss for surface .}$$

For Earth

function (1) for $Il^2 = IR^2$ gives 78 Gauss , for $Il^2 = I(2\pi R)^2$ gives 2 Gauss , for $Il^2 = I2\pi R^2$ gives 12 Gauss , for $Il^2 = I2\pi R^2/2$ arises **24 Gauss** which is the experimental value of 2010 , R/2 is the radius of core of Earth . Also the algorithm gives rotation 1.3 days .

For neutron stars a few are in agreement with that functions like burst nebule

Sgr A*

The algorithm gives 0.12 Tesla for $B = \dfrac{E}{IR^2}$, but the better function is : $B = \dfrac{E}{I2\pi R^2}$, so the result 0.02 Tesla , with out relativity .

I choose the relativistic coefficient γ^3 , $\gamma = \dfrac{1}{\sqrt{1 - \dfrac{v^2}{c^2}}}$, v = 0.11c , γ = 1

I choose this coefficient for $I = \dfrac{q}{t}$ and R^2

For an observer far a way from horizon $B = \dfrac{B_0}{\gamma^3}$, $B_0 = B = 0.02\,Tesla = 202\,Gauss$

this value **202 gauss** is 500 times of Earth magnetic field , the observed 2013 (1,2). The algorithm use coefficient k_{51a} of all above functions with out strong participation of relativity.

The problem of that algorithm is that do not give the rotation of black hole than the rotation of Sun or Earth .In 2013 was observed 88% the speed of light of the gas
A good approximation could arises by the following way using relativity(3) :

$V(t) = \dfrac{g.t}{\sqrt{1 + g^2 \dfrac{t^2}{c^2}}} = 2.4\text{x } 10^8$ m/sec or 0.8 C or 80% the speed of light , T = t

If we use the constant of **Stoney** k_{51b} we get for currents 0.3 C , B= 200 Gauss and for rotation velocity 0.96 C

Corrections of paper " Paradox of Hawking theory "

The radius of black hole of Sagittarius is : $R_{BH} = 1.1\text{x } 10^{10}$ m so temperature arises :
8.7x 10^9 Kelvin = **0.75 MeV** and not 0.5MeV
For Hawking radiation the temperature is : 2.7x 10^9 Kelvin = **22.7 KeV** and not 50KeV

Correction of paper " paradox of Hawking theory " , $CR = 1.713\text{x}10^7\, s\,m^{-2/3}\,kg^{1/2}$

Bibliography
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2.https://www.sciencenews.org/article/magnetic-field-black-hole-measured
3. Book " Gravity and Cosmology " Theodoros N Tomaras page 39 for seminars in free web of Creta 2013-2014

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