Derivation of Quasi-Gravity Field Using Heisenburg's Uncertainty Principle

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ABSTRACT: Using a linear combination of Heisenburg uncertainty equations, it is possible to derive a mathematical probability (field equation) which has fundamental characteristics similar to gravitational and electric forces. This is accomplished by substituting universal minimum and maximum values to position and momentum uncertainties.

UNCERTAINTY EQUATIONS:

The table below shows the uncertainty principle with respect to position Δx (1) and momentum Δp (2). The corresponding minima and maxima are determined by the theoretical maximum velocity of any mass, and this is *approximated* to be the speed of light. For aesthetics, the conventional value of the right side of the equation $(h/4\pi)$ has been rewritten as n.

$Uncertainty\ Principle: \ \Delta x \cdot \Delta p \ \geq n$		
Relation	**Minimum**	**Maximum**
1. $\Delta x \geq \frac{n}{\Delta p}$	$\Delta x_{min} = \frac{n}{\Delta p_{max}}$	$\Delta x_{max} \approx ct$
2. $\Delta p \geq \frac{n}{\Delta x}$	$\Delta p_{min} = \frac{n}{\Delta x_{max}}$	$\Delta p_{max} \approx mc$

DERIVATION:

For single particle at $t = 0$, we can define the average of its possible positions as $\bar{x}_{t_o}$. Similarly, we can define the average of its possible momentum to be $\bar{p}_{t_o}$.

We now define new values α, ω and create 1-Dimensional field equation $\Theta_x(t)$:

$$\alpha = \bar{x}_{t_o} + \Delta x_{min} = (\bar{x}_{t_o} + \frac{n}{mc})$$
$$\omega = \bar{p}_{t_o} + \Delta p_{min} = (\bar{p}_{t_o} + \frac{n}{ct})$$

$$\Theta_x(t) = \alpha\omega$$

$$\Theta_x(t) = \bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2t}$$

For **M** indistinguishable particles with the same $\bar{x}_{t_o}$, $\bar{p}_{t_o}$:

$$\Theta_x(t) = M(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2t})$$

The force field equation is given by $-\nabla^2\,\Theta(t)$. Avoiding the negative for aesthetics, we find:

$$\nabla^2\,\Theta(t) = \frac{2Mn\,(n + mc\,\bar{x}_{t_o})}{mc^2t^3}$$

From observers perspective ($r = ct$):

$$\nabla^2\,\Theta(t) = \frac{2Mn\,(n + mc\,\bar{x}_{t_o})}{mr^2t}$$

$$\nabla^2\,\Theta(t) = \frac{2Mn\,(n + mc\,\bar{x}_{t_o})}{mt}\,\frac{1}{r^2}$$

In 2-Dimensions:

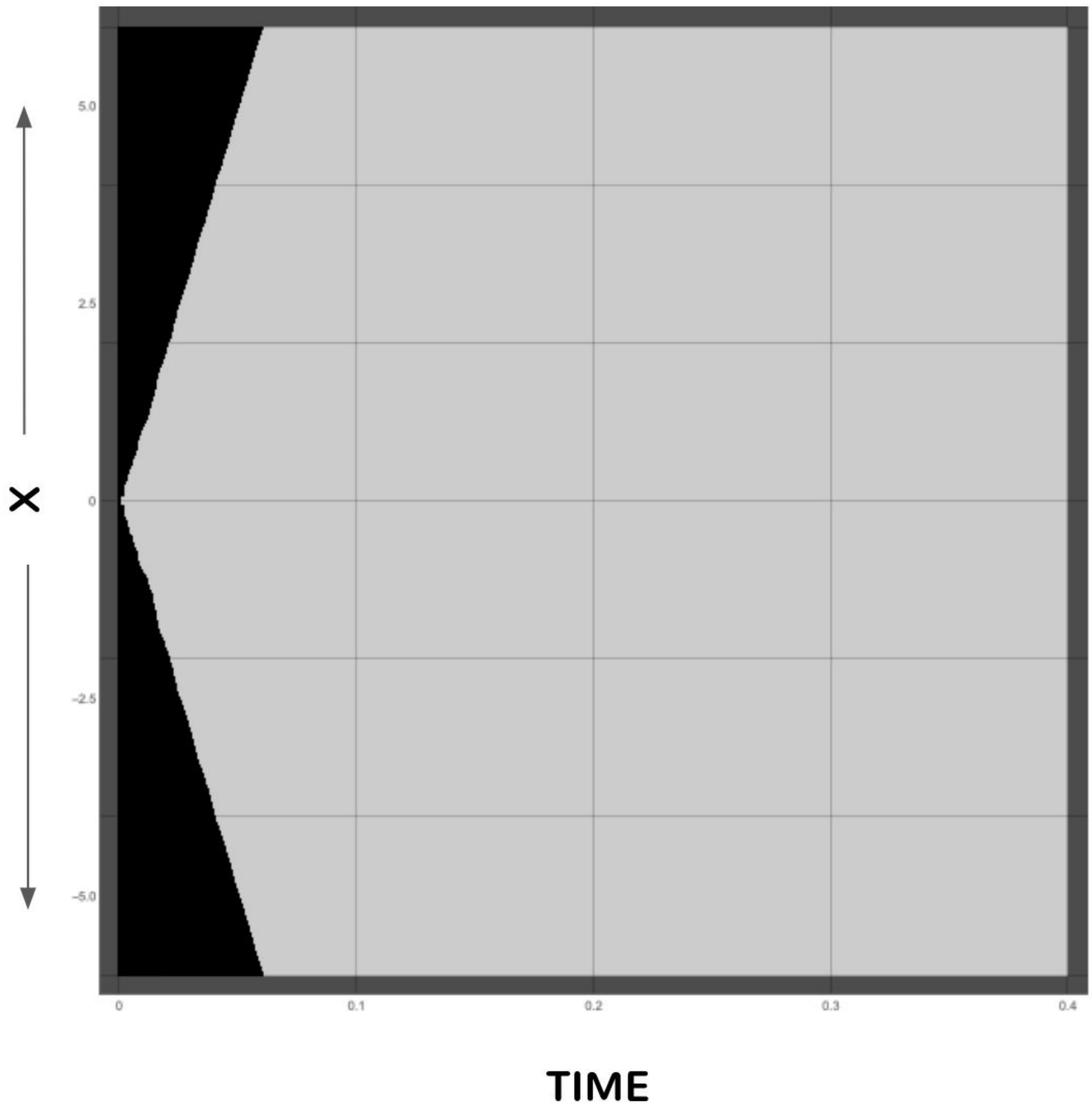
$$\Theta_{xy}(t) = (\bar{x}_{t_o}\overline{px}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2t}) + (\bar{y}_{t_o}\overline{py}_{t_o} + \frac{n\,\bar{y}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2t})$$

$$\nabla^2\,\Theta_{xy}(t) = \frac{2Mn\,(n + mc(\,\bar{x}_{t_o} + \bar{y}_{t_o}))}{mc^2t^3}$$

FIELD VISUALIZATIONS:

The following tables contain different field visualizations for the field and force equations. Equations are computed using the absolute value of each term. Field and force intensities are shown using temperature color scaling. Images have been titled according to the mass represented and are intended for virtual consideration.

SLOW HYDROGEN - FIELD
Linear Time



1D Field Equation

$$\Theta_x(t) = M_x\left(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2 t}\right)$$

Variable Setpoints

$M_x = 1$

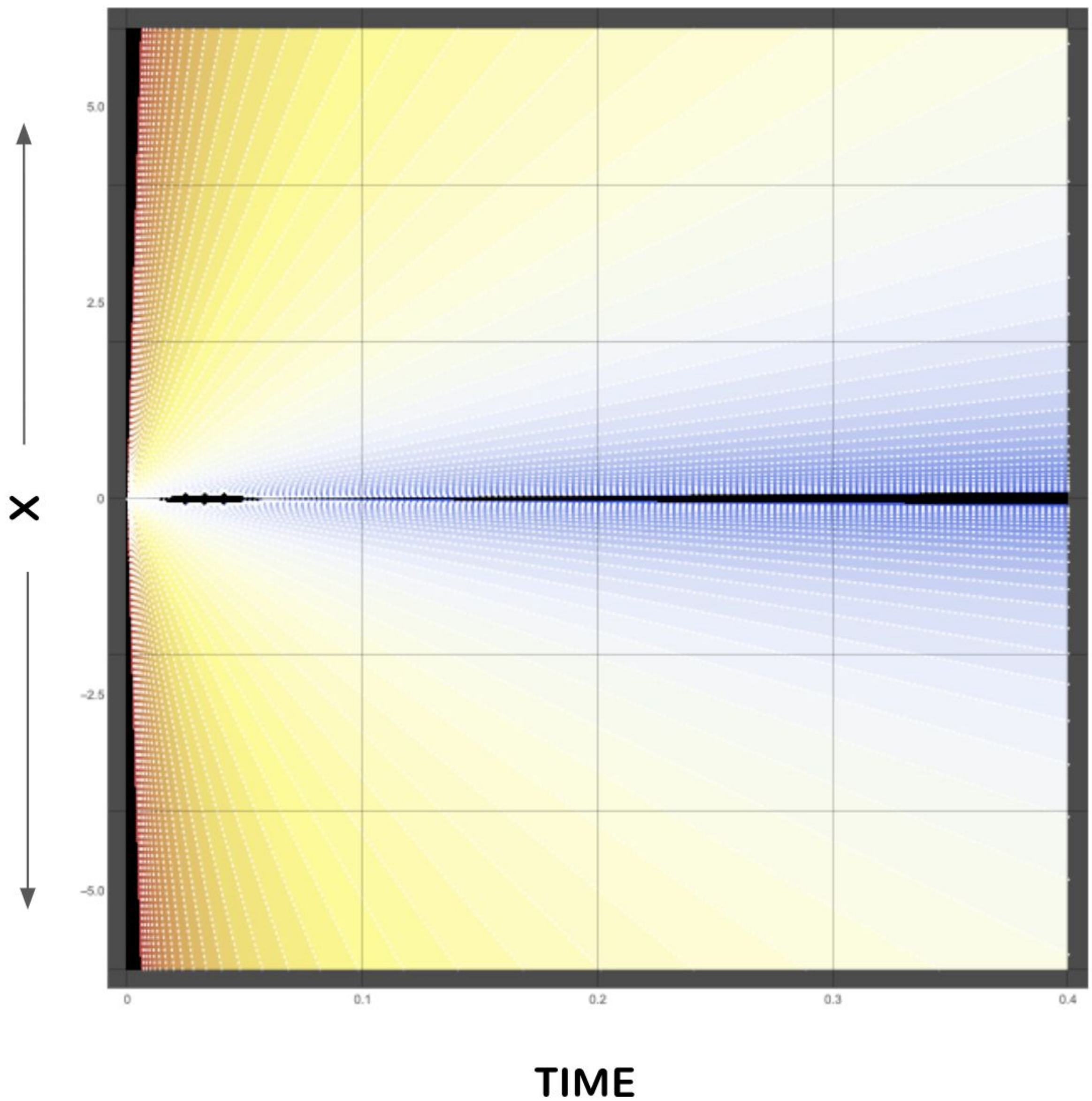
$\bar{p}_{t_o} = 0.$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

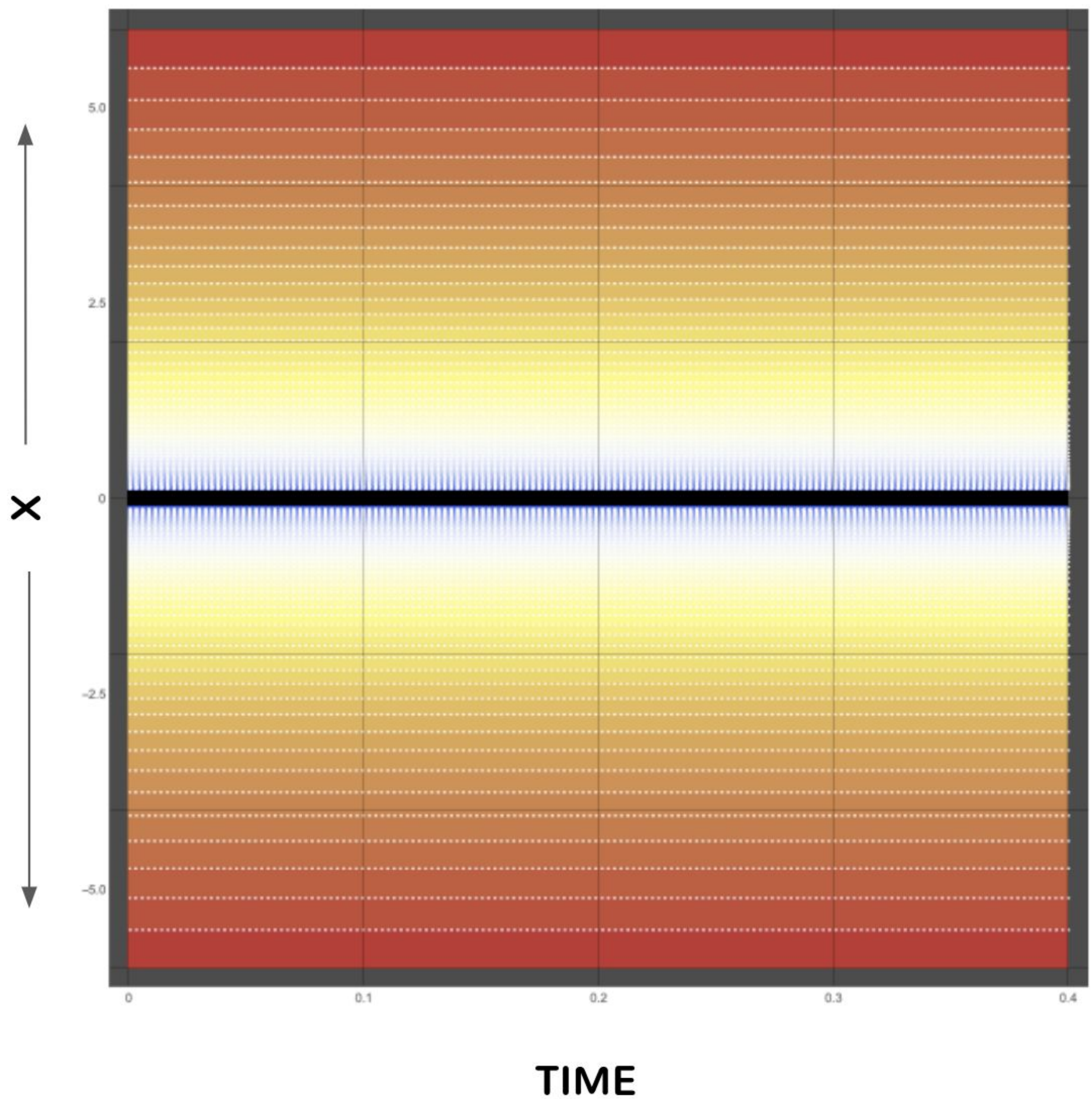
$n = (h/4\pi)$

SLOW HYDROGEN - FIELD
Log Time



1D Field Equation	**Variable Setpoints**
$\Theta_x(t) = M_x(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2 t})$	$M_x = 1$ $\bar{p}_{t_o} = 0.$ $m = 1.67 \times 10^{-27}$ $c = 2.998 \times 10^{8}$ $n = (h/4\pi)$

FAST HYDROGEN - FIELD
Log Time



1D Field Equation

$$\Theta_x(t) = M_x(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2 t})$$

Variable Setpoints

$M_x = 1$

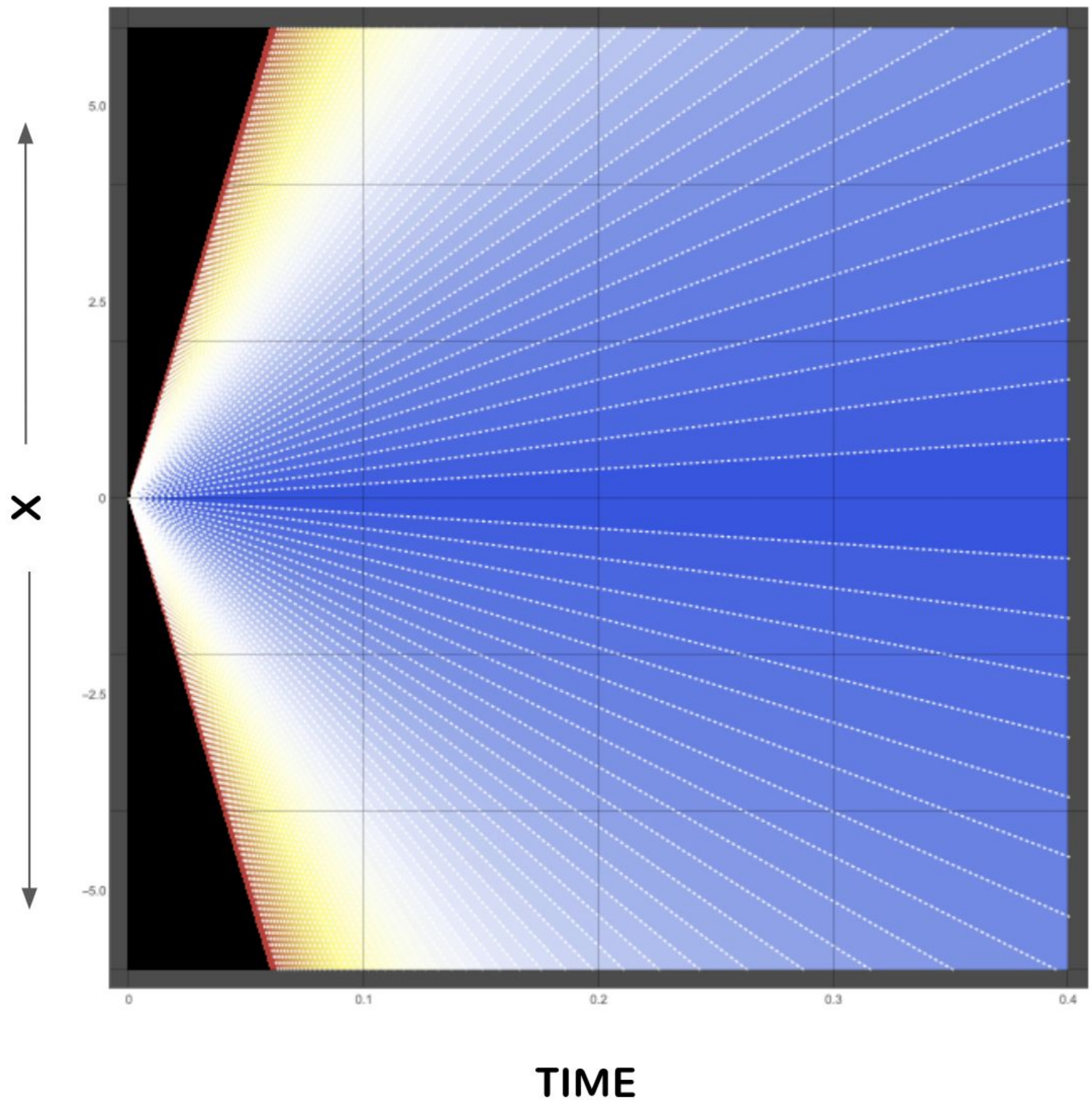
$\bar{p}_{t_o} = mc$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

SLOW BLACK HOLE - FIELD
Linear Time



1D Field Equation

$$\Theta_x(t) = M_x(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2 t})$$

Variable Setpoints

$M_x = 10^{74}$

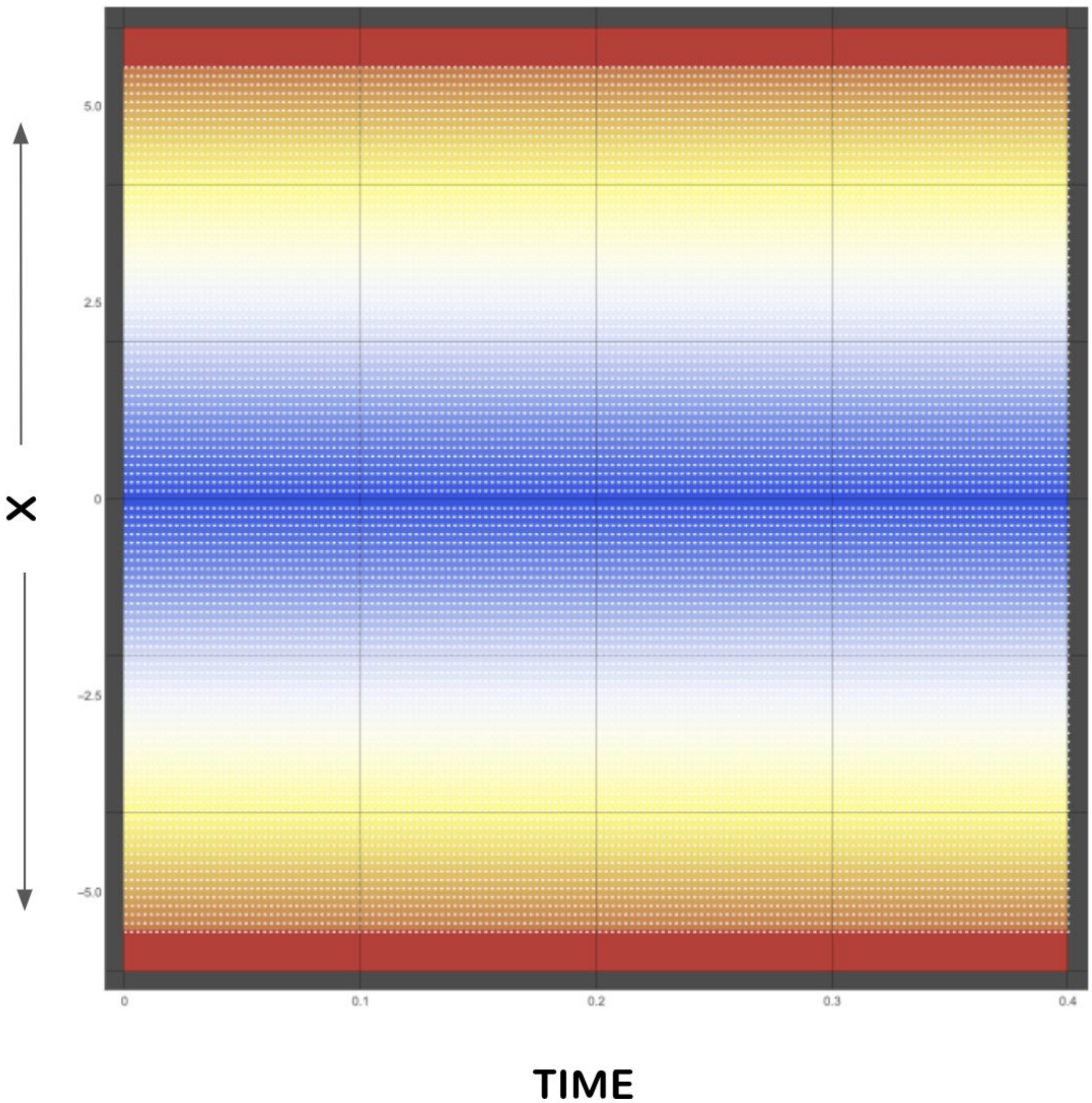
$\bar{p}_{t_o} = 0.$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

FAST BLACK HOLE - FIELD
Linear Time



1D Field Equation

$$\Theta_x(t) = M_x\left(\bar{x}_{t_o}\bar{p}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\bar{p}_{t_o}}{mc} + \frac{n^2}{mc^2 t}\right)$$

Variable Setpoints

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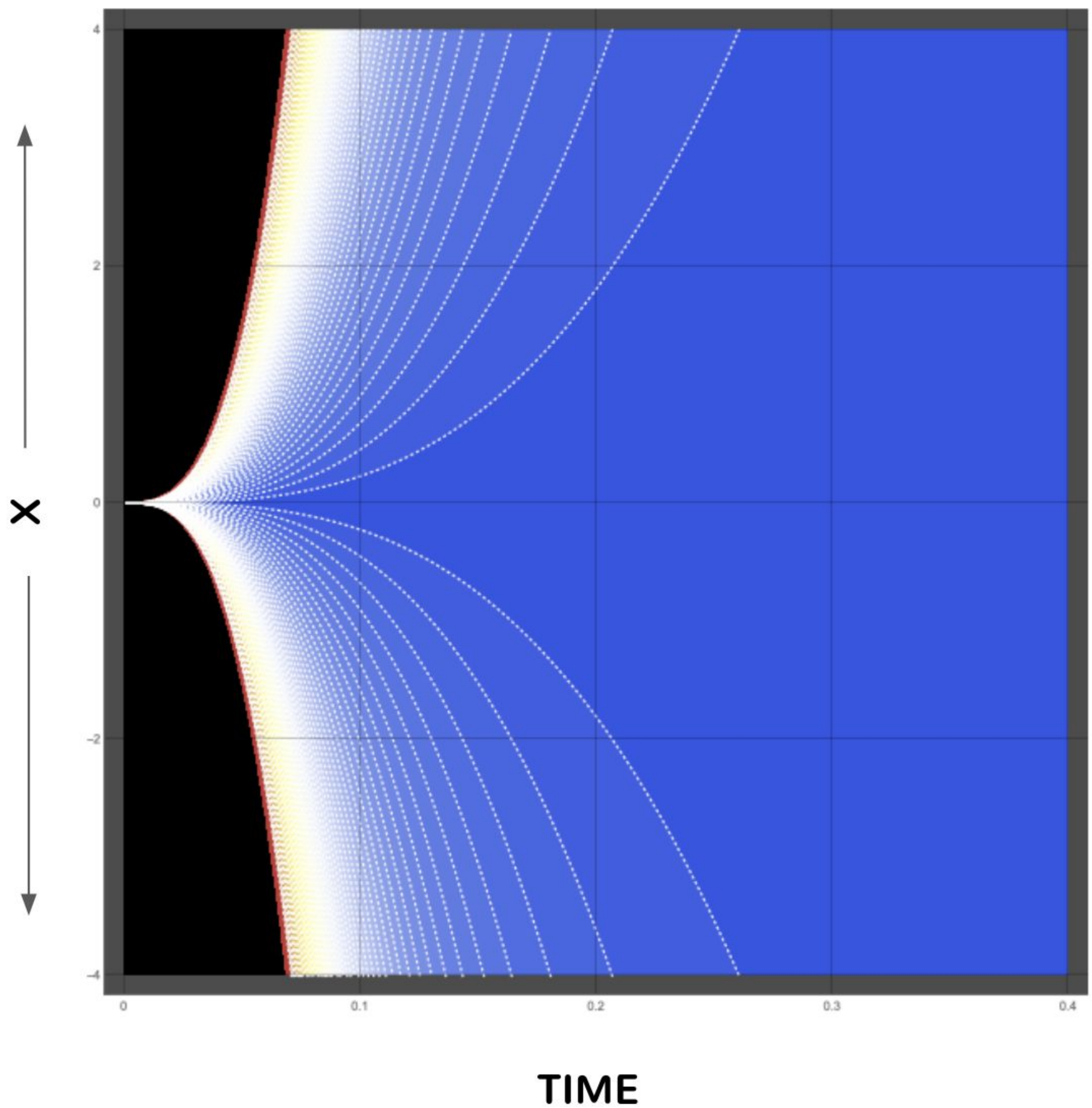
$n = (h/4\pi)$

SLOW BLACK HOLE - FORCE
Linear Time



1D Force Equation

$$\nabla^2\,\Theta_x(t) \;=\; \frac{2Mn\,(n + mc\,\bar{x}_{t_o})}{mc^2 t^3}$$

Variable Setpoints

$M_x = 10^{74}$

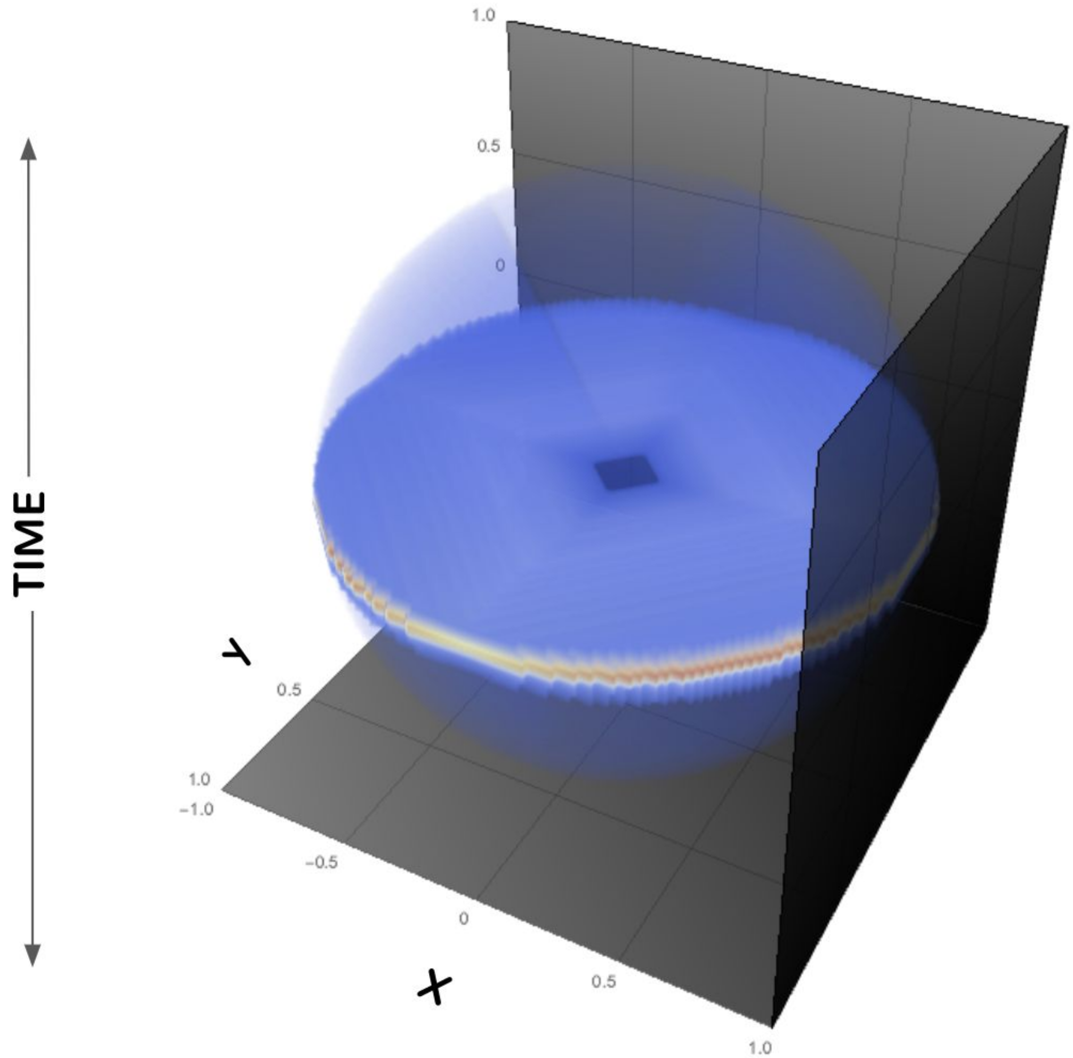
$\bar{p}_{t_o} = 0.$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

SLOW BLACK HOLE - FIELD
Linear Time



2D Field Equation

$$\Theta_{xy}(t) = M_x((\overline{x}_{t_o}\overline{px}_{t_o} + \frac{n\,\overline{x}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2t}) + M_y(\overline{y}_{t_o}\overline{py}_{t_o} + \frac{n\,\overline{y}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2t}))$$

Variable Setpoints

$M = 10^{74}$

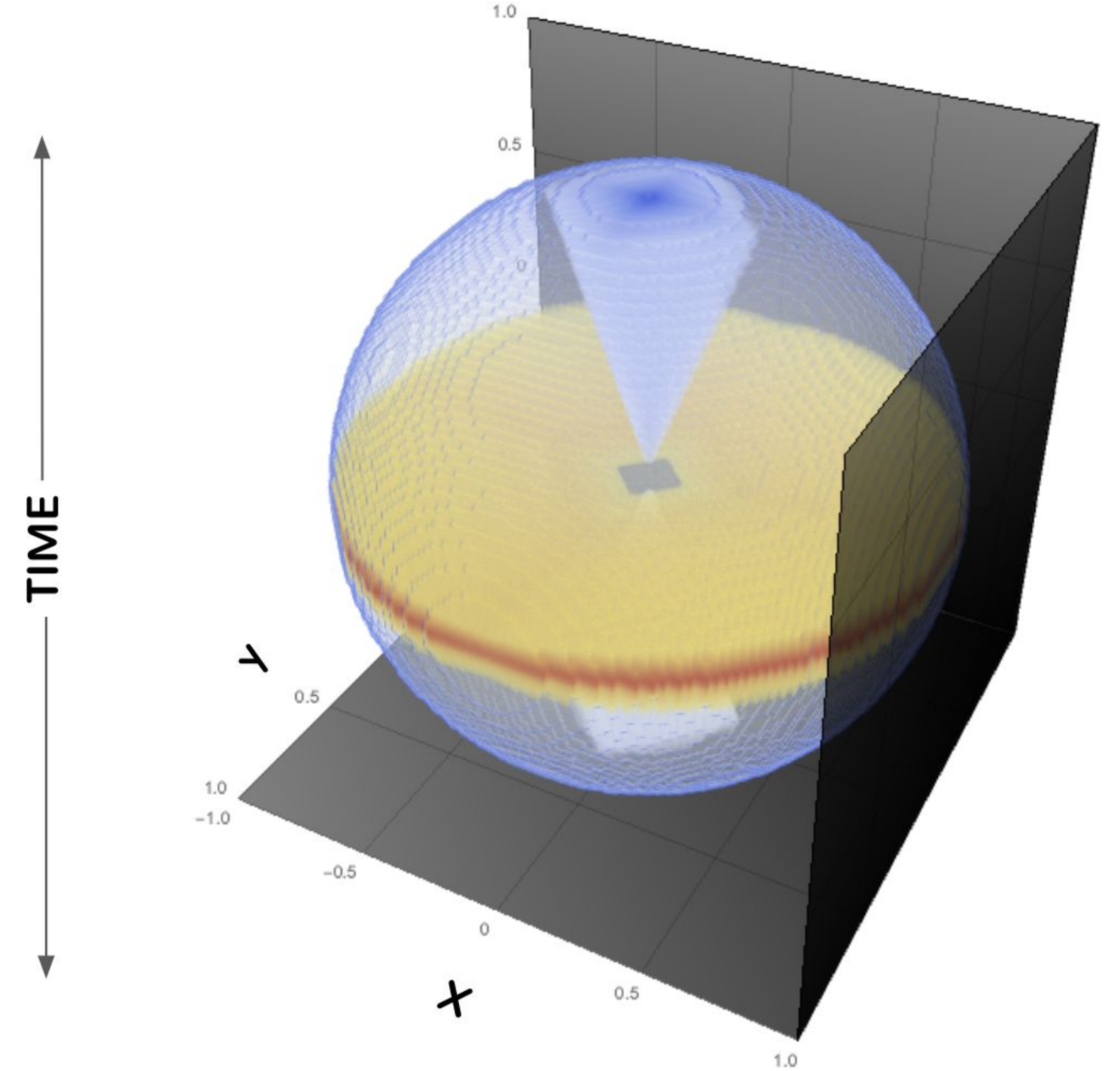
$\overline{p}_{t_o} = 0.$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

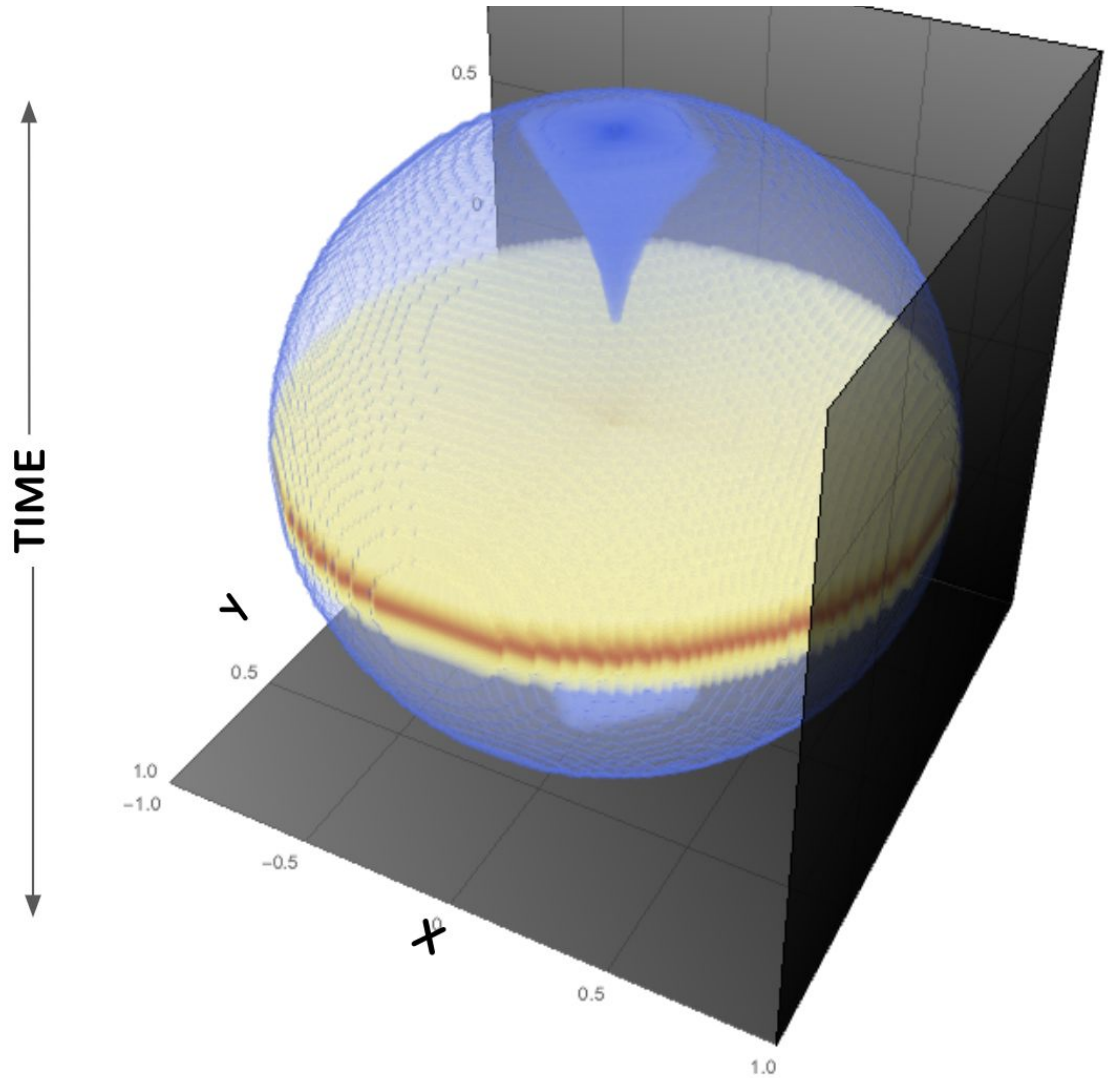
$n = (h/4\pi)$

SLOW BLACK HOLE - FIELD
Log Time



2D Field Equation	**Variable Setpoints**
$$\Theta_{xy}(t) = M_x((\bar{x}_{t_o}\overline{px}_{t_o} + \frac{n\,\bar{x}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2 t}) + M_y(\bar{y}_{t_o}\overline{py}_{t_o} + \frac{n\,\bar{y}_{t_o}}{ct} + \frac{n\,\overline{px}_{t_o}}{mc} + \frac{n^2}{mc^2 t}))$$	$M = 10^{74}$ $\bar{p}_{t_o} = 0.$ $m = 1.67 \times 10^{-27}$ $c = 2.998 \times 10^{8}$ $n = (h/4\pi)$

SLOW BLACK HOLE - FORCE
Log Time



2D Force Equation

$$\nabla^2 \Theta_{xy}(t) = \frac{2Mn\,(n + mc(\bar{x}_{to} + \bar{y}_{to}))}{mc^2 t^3}$$

Variable Setpoints

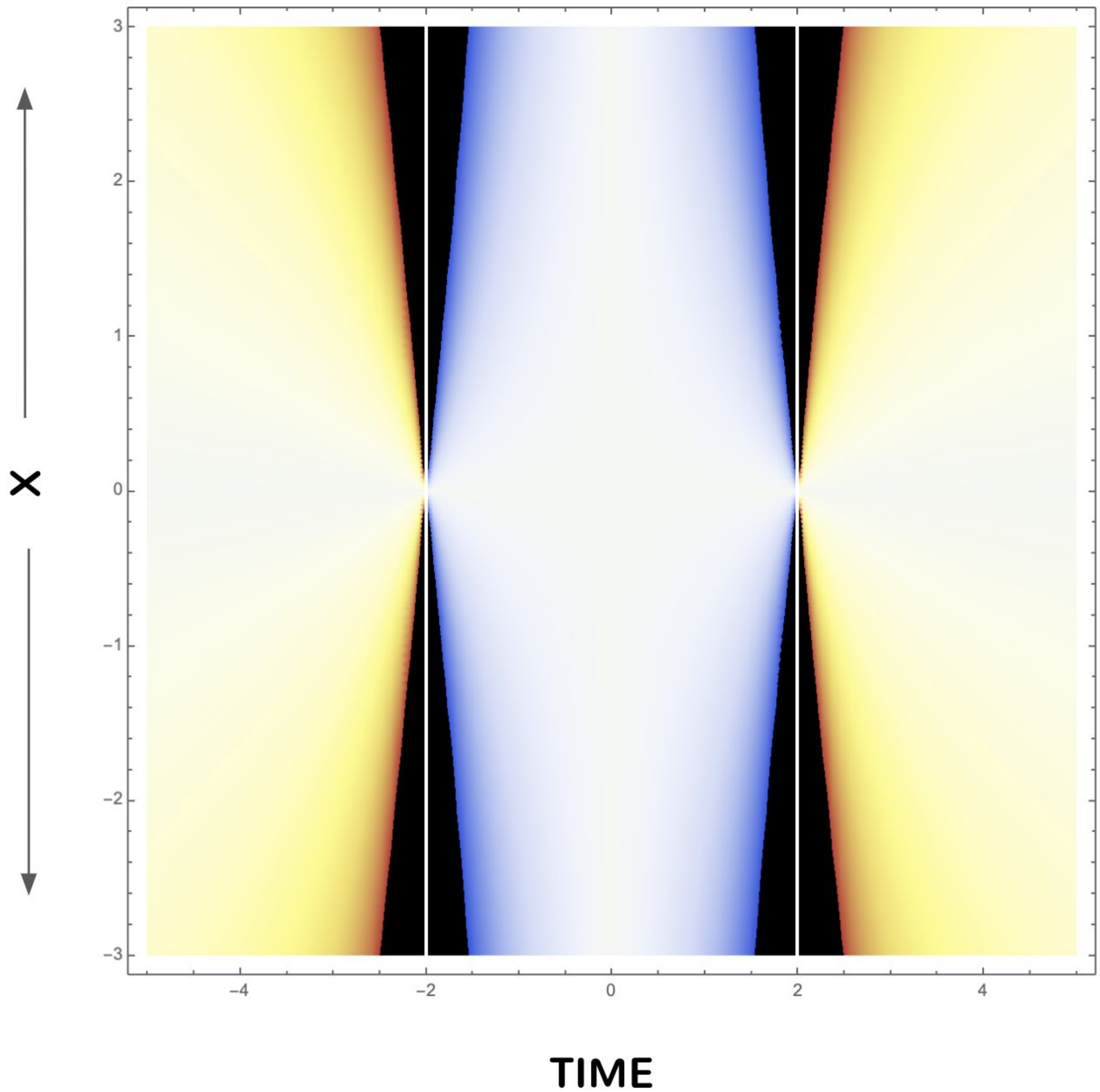
$M = 10^{74}$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

TWO BLACK HOLES - FORCE
Linear Time



1D Force Equation

$$\frac{2\,M\,\left(n\,t+c\,px\,\left(t^{2}-T^{2}\right)\right)\,\left(n+c\,m\,x\right)}{c^{2}\,m\,\left(t-T\right)\,\left(t+T\right)}$$

Variable Setpoints

$M = 10^{74}$

$m = 1.67 \times 10^{-27}$

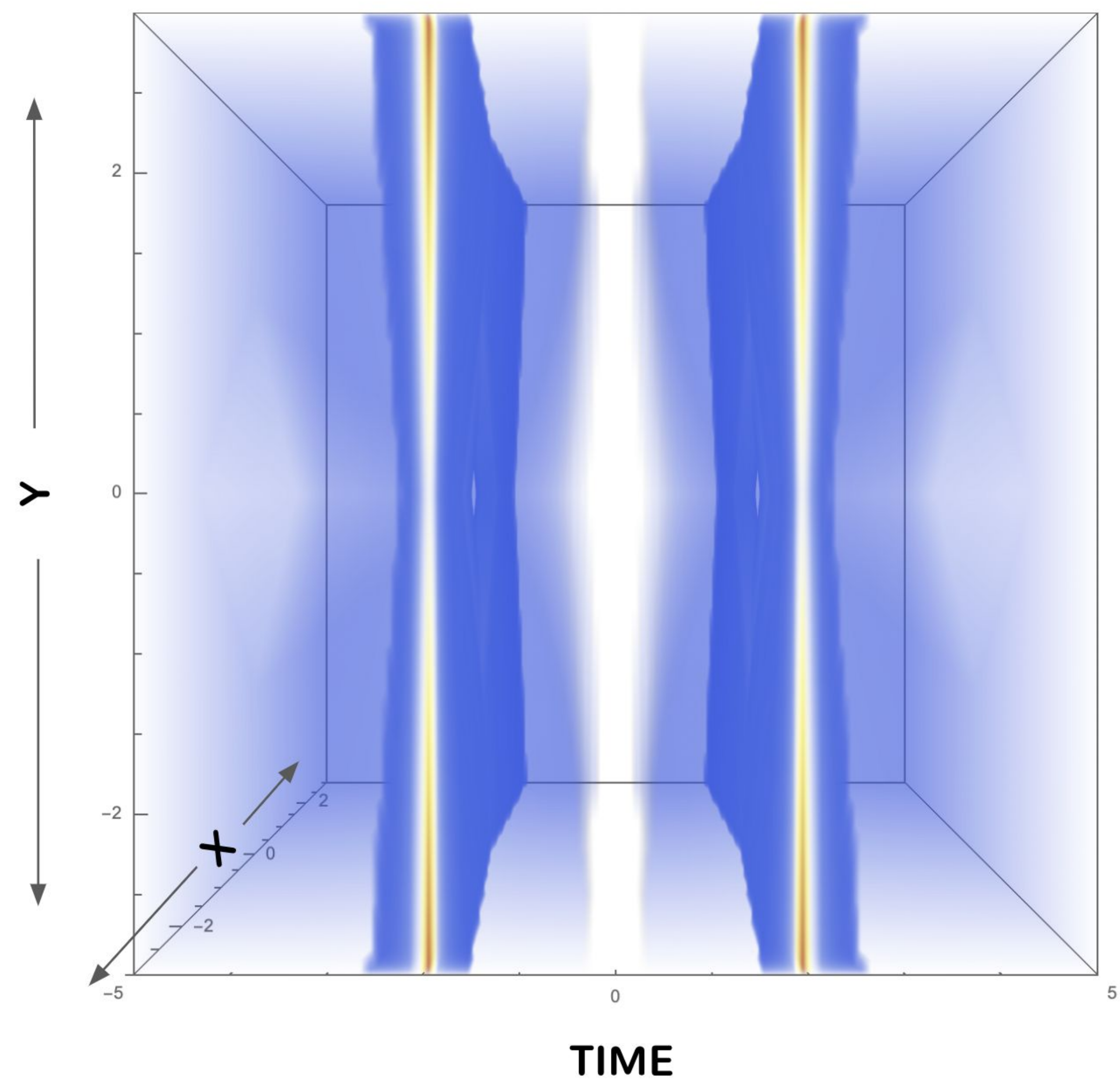
$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

$\bar{p}_x = 0.$

$T = 2$

TWO BLACK HOLES - FORCE
Linear Time



2D Force Equation

$$\frac{2 M \left(2 n^2 t + c^2 m \left(t^2 - T^2\right) (px\, x + py\, y) + c\, n \left(px \left(t^2 - T^2\right) + py \left(t^2 - T^2\right) + m\, t\, (x + y)\right)\right)}{c^2 m (t - T)(t + T)}$$

Variable Setpoints

$M = 10^{74}$

$m = 1.67 \times 10^{-27}$

$c = 2.998 \times 10^{8}$

$n = (h/4\pi)$

$\bar{p}_x = \bar{p}_y = 0.$

$T = 2$