PS #3 available later today on classes website: http://www.cmi.yale.edu/bh

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black hole: $V_{esc} > c$

$R < R_s$

→ interesting because c is interesting

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c is fastest velocity possible

$V_{esc} = c$ ~ "event horizon"

$V_{esc} = \left(\frac{2GM}{R}\right)^{1/2}$

No information comes from inside event horizon to outside.

all matter $R < R_s$
collapses to a single
point in finite time
→ point of infinite density
"singularity"

"space and time are reversed"

SPECIAL RELATIVITY
(laws of motion)

GENERAL RELATIVITY
(law of gravity)

SPECIAL RELATIVITY
→ limit on velocity
($v \leq c$)

$$\gamma = \frac{1}{\sqrt{1 - v^2/c^2}}$$

$v \ll c$ $\gamma = 1$

↳ $\Rightarrow$ Newtonian physics

$v \to c$ $\gamma \to \infty$

$MASS = m_0 \times \gamma$

↑ newtonian mass

$v \to c$ $MASS \to \infty$

$F = m \times a$ ⇝ acceleration

↗ force

↑ $m \to \infty$

$\frac{F}{m} = a$ cannot have acceleration