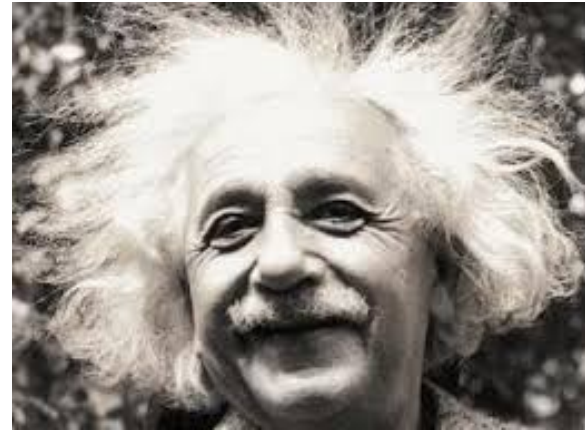


brief L&D: What happens near black holes?

then continuation of video: "NOVA: Einstein Revealed"



Review of Special Relativity effects

IF YOU ARE MOVING RELATIVE
TO SOMETHING, THAT SOMETHING
LOOKS SHORTER TO YOU (IN THE DIR'N
YOU'RE MOVING)
& YOU LOOK SHORTER TO THEM

→ LENGTH CONTRACTION

ALSO, THEIR CLOCKS RUN MORE
SLOWLY COMP'D TO YOURS (AND V.V.)

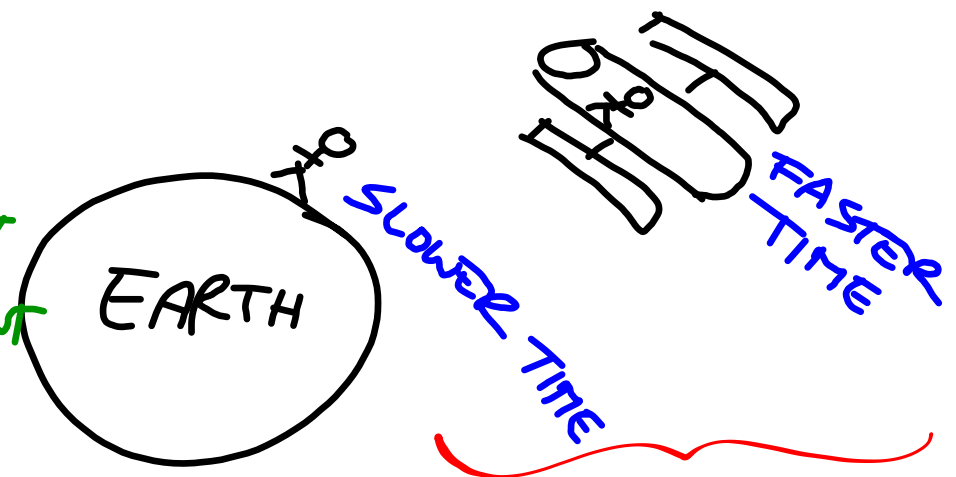
→ TIME DILATION

(TWIN PARADOX)

WHAT WEIRD EFFECTS FROM GR?

THE CLOSER YOU ARE TO A MASS, THE SLOWER YOUR CLOCK RUNS REL. TO. SOMEONE FARTHER AWAY.

THIS IS THE 2ND TIME DILATION EFFECT
- DON'T NEED MOVEMENT
- JUST NEED DIFF AMT. OF GRAVITY



NOT SYMMETRIC LIKE SR TIME DIL.

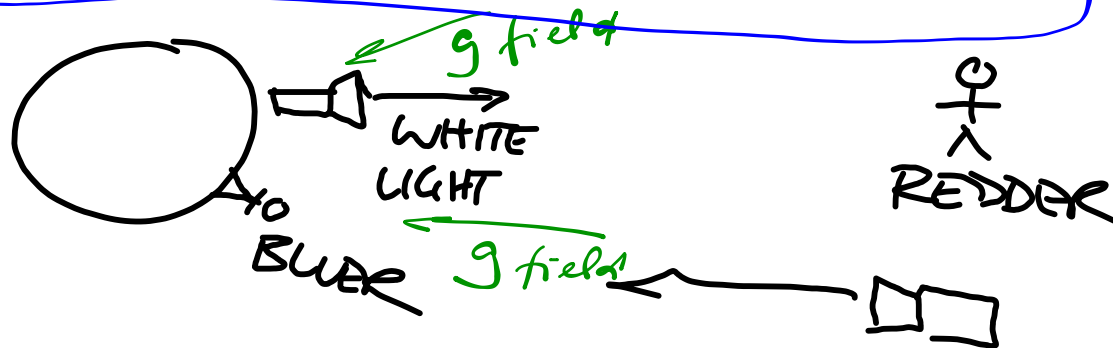
DOPPLER SHIFT

- THINGS MOVING TOWARDS
YOU SOUND HIGHER

AWAY LOWER

- W/ LIGHT: TOWARDS → BLUE
(HIGHER FREQ)
AWAY → REDDER

"GRAVITATIONAL REDSHIFT"



E OF RED PHOTON $<$ E OF BLUE PHOTON