11/7/07
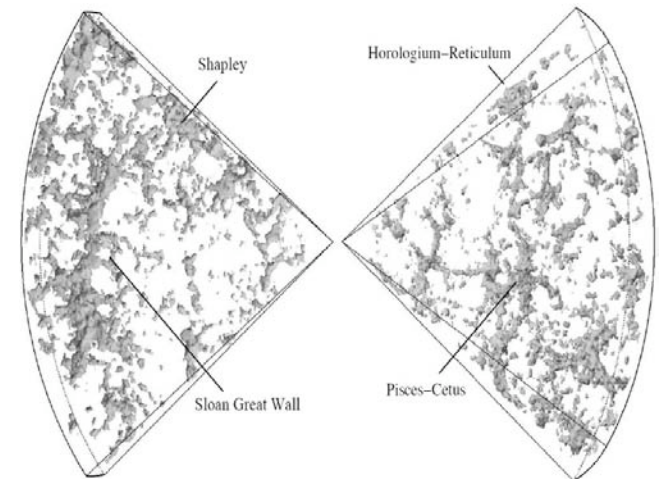
Exam 3 this Friday, November 9, Chapters 8 and 9

Review sheet posted

Review session, Thursday, November 8, 5:00 PM
Room CPE 2.220 NOTE DIFFERENT ROOM!!

Reading:Chapter 8, Sections 8.1, 8.2, 8.5, 8.6, 8.7, 8.10, Chapter 9

Astronomy in the News - 5th planet discovered orbiting the
nearby star 55 Cancri

Pic of the day - Sloan "Great Wall"
largest structure in the Universe

Special Office Hours

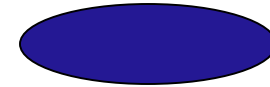After 5 today, Wednesday (History Channel filming)

After 3 tomorrow, Thursday (dentist, plumber)

Rotating Kerr Black Hole

Mass and spin, but no electrical charge

Assume all mass in singularity, no mass anywhere else
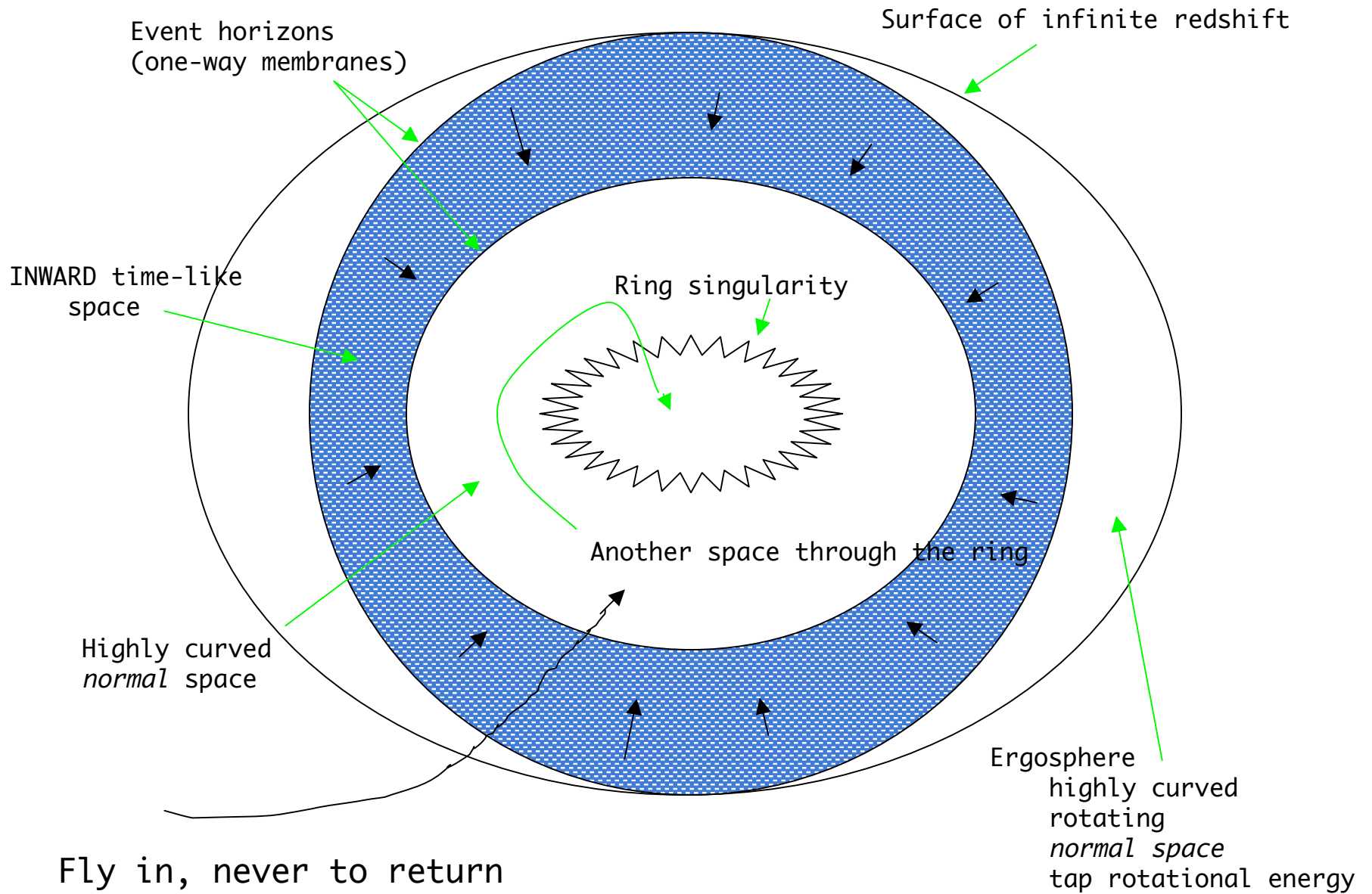(assumption necessary to solve equations)

Find *singularity is a ring* (not a point)
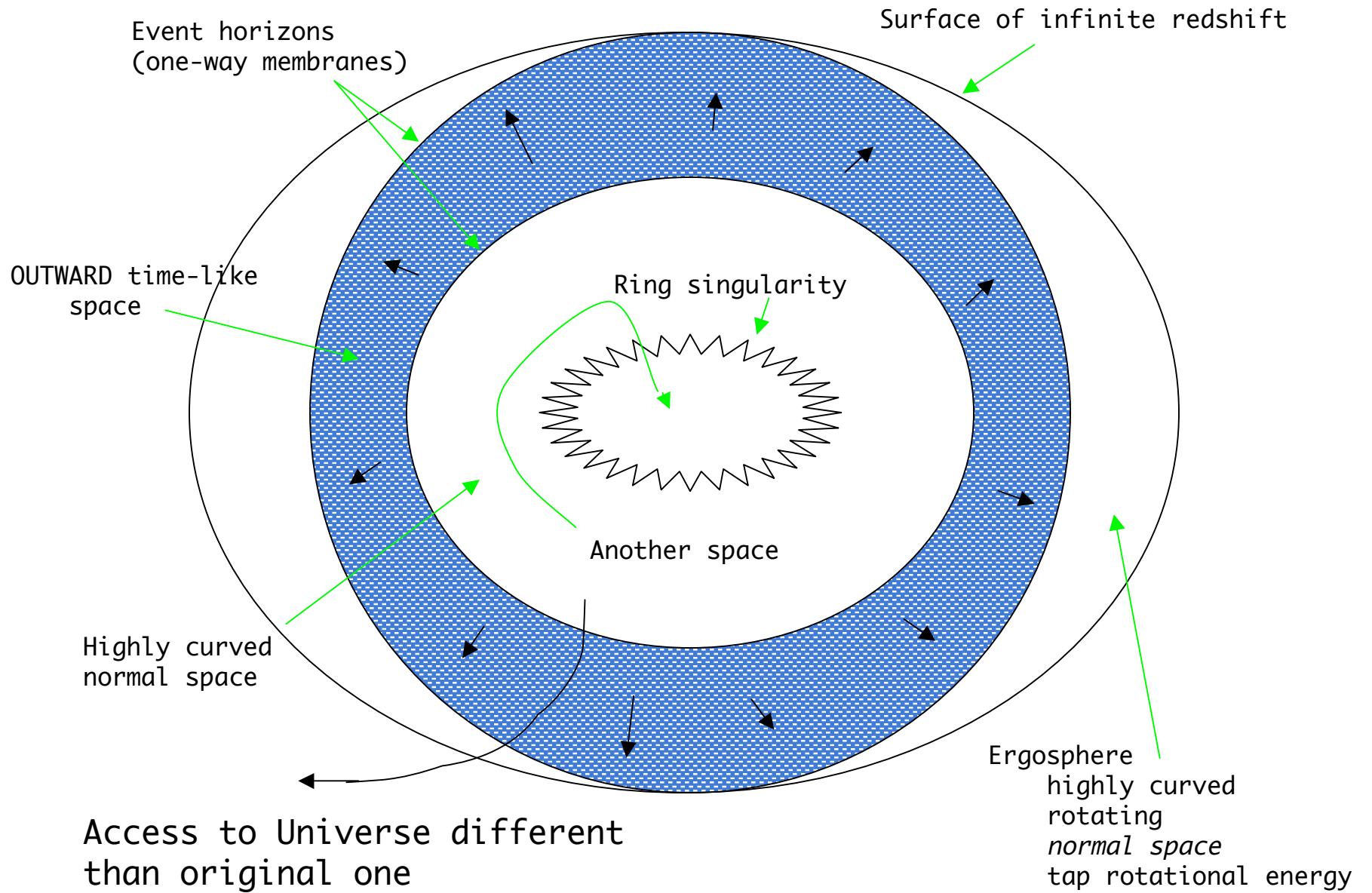
0 thickness, ∞ density, still uncertainty problem

Infinite Universes!

Cross-sectional view of rotating Kerr black hole

Event horizons
(one-way membranes)

Surface of infinite redshift

INWARD time-like
space

Ring singularity

Another space through the ring

Highly curved
normal space

Ergosphere
highly curved
rotating
normal space
tap rotational energy

Fly in, never to return

In future

Event horizons
(one-way membranes)

Surface of infinite redshift

OUTWARD time-like
space

Ring singularity

Another space

Highly curved
normal space

Ergosphere
highly curved
rotating
normal space
tap rotational energy

Access to Universe different
than original one

Are Different Universes Real?

In Real Universe:

Light falls in

Accelerated to higher energy: Bluesheet
    warp space
    change mathematical, hence physical solution

So, probably not in this case, but stay tuned…

One Minute Exam

In a rotating black hole:

A) The surface of infinite redshift is identical to the event horizon.

B) You can escape the black hole back to the universe from which you entered.

C) There are exactly two universes.

D) The space entered through the singularity is different than the space surrounding the singularity.

End of Material for Test 3