general relativity – december 6

material discussed in class

Roughly appendix H in the book, or pp 192-199 of the lecture notes.

exercises

- Verify that any particle, whether massive or massless, whether it moves just in the radial direction or also in the θ, ϕ direction, always moves in a direction in the u, v plane which is upward and makes an angle of 45 degrees of less. This verifies e.g. the statement that there is no escape once someone crosses the horizon.
- Someone is at $\tau = 0$ at $r = 2MG$. Show that no matter what this person does, he or she will always hit the singularity in a proper time $\Delta\tau \leq \pi MG$.