

Astronomy 142: Extra Credit Assignment

This *optional* extra-credit assignment is due on Monday, November 29. It can be turned in in class or delivered to my mailbox in 4055 McPherson Lab *by 5 pm*. It will be assigned a letter grade and added to your average course grade from other assignments, with a weight equal to 10% of the total course grade (a little more than one homework assignment). For example, a grade of B+ (3.33) on this assignment would raise your course grade by 0.333, the difference of B to B+, B+ to A-, etc.

The Assignment

Write a 3-5 page (typed, double-spaced) essay on one of the three topics below. Essays will be graded based on clarity of expression and level of insight — a good essay should be well organized and well written, and it should have something interesting to say. Although the essay is short, the usual standards of quality apply: an “A” grade corresponds to an excellent essay, a “B” grade to a good one, etc.

Your essay must be in your own words, and you should clearly identify any direct quotes from other sources. You do not need to give detailed footnotes, but if you use sources in addition to those mentioned below you should list them in a brief bibliography.

Topic Choices

1. Using resources at the web site <https://eventhorizontelescope.org/>, research the Event Horizon Telescope project. Be sure to read about all the topics under the “Science” tab, read the science-oriented press releases on the Home page, and browse through the videos under Press & Media Resources. Write an essay describing the Event Horizon Telescope project that addresses the following questions: What are the project’s scientific goals? What methods does it use to achieve those goals? What has it accomplished to date?
2. Based on Chapters 5 and 6 of *Black Holes and Time Warps*, summarize the roles that J. Robert Oppenheimer and John Archibald Wheeler played in the development of the atomic (fission) bomb and the hydrogen (fusion) bomb. (If you are interested in learning more about this subject, I highly recommend the superb book *The Making of the Atomic Bomb*, by Richard Rhodes.)
3. Black holes have become an element of culture far beyond pure science — as objects in science fiction books and films, and as metaphors in the social sciences, literature, and art. Describe two specific examples of the appearance of black holes in one of these realms. What is the correspondence between the properties of real black holes (as we understand them scientifically) and the way that they are portrayed in these examples? Why have black holes become objects of popular fascination and powerful cultural metaphors?