A3 - Black Holes

12/8/2025

95 Points Possible

Attempt 1

In Progress

NEXT UP: Submit Assignment

Add Comment

Unlimited Attempts Allowed

10/31/2025 to 12/8/2025

Details

As this is due on the last minute of class, late assignments CANNOT be accepted and will receive a zero grade.

The total number of points for this submission is 95; 5 more points will be awarded through the pre-assignment **A3 - Black Holes preassignment** (https://umich.instructure.com/courses/798594/assignments/2902291) (due a week in advance), in which you declare what you plan to submit. The pre-assignment grade will also be set to zero if you don't submit the final assignment in time.

Black holes assignment instructions

The goal of this assignment is to let you demonstrate your knowledge and understanding of black holes in an entertaining way.

Your creative project can be in any format, but must feature an astronomical idea **related to black holes**, as a central theme or plot point. Examples are: painting, digital art, comic, model, computer simulation, board game, computer game, art installment, stand-up performance, composition, dance, song, an idea for a book or short fictional story, etc.

Submission:

- All work should be submitted electronically.
- 2-d art should be photographed. 3-d art may be photographed or videotaped as needed. If you build a model or a demo, you should record a short video that demonstrates how it works. Ask the instructor if you are unsure about how to submit your work.
- Book/story/script ideas should be submitted as a short "pitch" (**250 words max**). Don't actually write the book/story/script, only describe the premise, story line, plot twist, and how black hole concepts are a critical component of the story.
- **All submissions must include an explanation** of how your creation reflects black holes concepts. For example, if you paint a BH you should write a short description of how the physical concepts are depicted in your work, or record yourself explaining your art. This description may be done in writing, audio, or video recording. * How elaborate the write-up/recording must be depends on your project. For example, if your art project is a canvas painted fully in black, you'll have a lot of explaining to do to back it up.
- ***Abstract* projects** (i.e., anything that doesn't explicitly have a black hole in it, such as a poem that depicts a downward-spiral situation that is somehow an analogy for a BH, but not an actual BH) **must include an explanatio**n.
- Recordings (video/audio) should not be longer than 5 minutes.
- **Write-ups (pitches, explanations) should be up to 250 words**.

Grading will be focused on the following items:

1. **Incorporating black hole concepts in your work**. **At least one concept** from the list below must to be incorporated.
   * you may include other concepts we learned in class or from your independent study.
   * Full credit will be given for concepts that are **incorporated** in your work, and not just sprinkled on top as an afterthought.

2. **Accurate Astronomy and Physics**: The concepts related to BH physics are used **correctly**. You must show that you have an understanding of these concepts.
   * Points will not be lost for creative liberties required by your story/work as long as that they don't violate the laws of physics **related to black holes** (for example, teleportation is OK, but escaping out of a black hole is not).

3. **Clarity of ideas:** The connection to BHs should be obvious to most audiences and not forced. Points will not necessarily be lost for poor grammar or spelling, or for the quality of your brush strokes or talent, unless these errors make the work difficult to understand.

4. **Demonstrated understanding** of BH concepts.

5. **Creativity!**

Black holes concepts -- **at least one** needs to be incorporated into your work as a main concept. Incorporated = main and important ingredient; if removed, the work will no longer make sense.

- The size or radius of an event horizon depends on BH mass
- Nothing can exit the event horizon of a black hole, not even light
- Time moves differently near the event horizon
- Light is gravitationally-redshifted due to BH gravity
- Matter falls onto black holes in an accretion disc

FAQs:

Q: I submitted the pre-assignment but now I have a new idea. Can I change my format?
A: yes.

Q: what are common mistakes in this assignment?
A: not including a bibliography; incorrect black hole physics; the black hole is not integrated in the work; artwork did not include a short description.

Q: can I reproduce an astronomical image? for example, create my own painting based off of one of the artist's concept drawings we saw in class?
A: you may do that, as long as you reference the original creator with proper acknowledgement.

Q: can I work with a classmate?
A: We may allow it on a case by case basis, depending on the project, if and only if everyone contributes to the project; You be asked to include a description of who did what. You **must contact the professor for permission** in advance.

Q: I exceeded the word limit... is that OK?
A: Please make all efforts to stay within the requested word limit. The word limit is in place to help us complete the assessment in a timely fashion, otherwise final grades might be delayed, and nobody wants that!

Q: I'm having trouble uploading files, what should I do?
A: If you need to upload multiple files (e.g., a recording and a PDF) you can add the second file as a new submission. Just let us know in the body of the work or in comments that there are multiple files to look at. You may use platforms such as Youtube, TikTok, etc if you wish to avoid uploading large files to Canvas.

Q: what format should the citations be in?
A: There is no required bibliography format, list your resources in a way that we can locate them. Links are fine.
Lectures can be cited as "Astronomy 107 F25 Lecture #11" (if you are citing lecture 11 as an example); you can point to individual slides if you'd like.

In-line citations are not needed, unless they are required for proper attribution (e.g., if you are quoting someone else's words).

Q: How do I avoid plagiarism when using external resources?
A: Plagiarism is a form of **academic misconduct (https://lsa.umich.edu/lsa/academics/academic-integrity/academic-misconduct.html)** , which we and the university take very seriously. You cannot simply copy-paste sentences from your sources, even if you include a reference. Paraphrase and using your own words to convey the information you learned. This a module of **how to use sources (http://www.beyondplagiarism.sweetland.lsa.umich.edu/)** from Sweetland Center for Writing is very helpful.

Q: What kind of resources can I use?
A: You may use any resources. You should assess whether these resources are reliable. For example, a YouTube channel by a reputable astronomer or science communicator, an official NASA press release, are a fine resource whose reliability can be established; some random blog post by someone whose credentials you can't track down is not. You might find that scientific publications of some of these topics are hard to digest since they are often aimed at experts in the field. Let us know if you need help deciphering these types of sources.

Q: May I use ChatGPT or other AI robots to do the work for me?
A: No, you may not use a robot (or a person, for that matter) to do the work and present it as your own. That's cheating. However, you *can* use AI-generated work in a creative way, that demonstrates *your* understanding and creativity. For example, write a critique of an AI-generated digital painting, and explain how it does (or doesn't) get the BH physics right. You must credit the creator of any such work, artificial or not.

View Rubric

BH creative assignment 003

Criteria	Ratings	Pts

BH creative assignment 003

Criteria	Ratings							Pts
At least one BH concept incorporated in the work	**20 pts** At least one BH concept from the list is incorporated in the work. It is an integral and important part of the project.		**10 pts** At least one BH concept from the list is incorporated in the work, but it is only marginally an integral and important part of the project.		**5 pts** At least one BH concept from the list is displayed in the work, but it is not an important part of it.		**0 pts** The work does not incorporate any BH concepts	/ 20 pts
Accurate BH physics	**25 pts** The BH concepts are displayed accurately	**23 pts** One minor mistake in how the BH concepts are depicted	**20 pts** A couple of minor mistakes in how the BH concepts are depicted	**15 pts** Several mistakes in how BH concepts are depicted	**12 pts** A major mistake or mistakes in how BH concepts are depicted	**0.01 pts** The BH concepts displayed in a way that violates the laws of physics	**0 pts** No BH concepts	/ 25 pts
Clarity	**20 pts** The work is clear, the connection to BH is obvious to most audiences and not forced.		**10 pts** It difficult or impossible to understand a significant portion of the work.		**0 pts** Missing a required write-up			/ 20 pts
Resources and bibliography	**5 pts** Credible resources listed				**0 pts** Resources not listed			/ 5 pts
Demonstrated knowledge and understanding of BH concepts	**25 to >13 pts** It is clear from your work and/or write-up/recording, that you understand the concepts of BH that you chose to highlight in your work.	**13 to >10 pts** It is not clear that you understand some of the BH concepts that you chose to highlight in your work	**10 to >0.01 pts** A write up or recorded explanation exists, but it is of poor intellectual quality, or does not adequately demonstrate that you understand the concepts.		**0.01 to >0 pts** An explanation of how your creation reflects BH concepts was not submitted.		**0 pts** The work demonstrate no understanding of BH concepts	/ 25 pts

Total Points: 0

Choose a submission type

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Edit View Insert Format Tools Table

12pt Paragraph

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