

**Due Date:** May 17, 2017 23:59:59      **Points:** 5 (worth 3 daily grades)

**Details:**

With the information that we learned in class from viewing the video documentary *Particle Fever* (2014), you will now conduct a research study and write an expository essay that discusses your findings. The expository essay will focus on a topic of your selection from a list of three approved topics.

Per *Owl Purdue Online Writing Lab* (2017) “an expository essay is a genre of essay that requires the student to investigate an idea, evaluate evidence, expound on the idea, and set forth an argument concerning that idea in a clear and concise manner. This can be accomplished through comparison and contrast, definition, example, the analysis of cause and effect, etc.”

**General Requirements:**

Use the following information to ensure successful completion of the assignment:

- Focus on the main topic that you select. Be sure all subtopics are addressed as indicated.
- Collect information related to the chosen topic. Be sure that your sources are authentic, reputable, and trustworthy. Sites that are generally acceptable include .edu, .gov, encyclopedias (other than Wikipedia), science publications such as *Science Daily Physics News*, *PHYS.ORG*, *Discover Physics and Math*, etc.
- State and support your facts with in text citations. Interpret the facts by expounding the information in your own words.
- The essay will be submitted in the Canvas “Particle Fever Essay” assignment.
- The essay must include a thesis statement and purpose. See the section below called “Sample Thesis and Purpose Statements.”

**Directions:**

Select one of the following three topics and write an expository essay.

\_\_\_\_ **TOPIC 1:** Discuss the Large Hadron Collider (LHC) by addressing the following:

1. Where is the LHC located?
2. When was the construction of the LHC first planned?
3. What type of conditions are recreated in the LHC?
4. What are scientists working at the LHC trying to understand?

To receive full credit, all 4 questions above must be addressed.

\_\_\_\_ **TOPIC 2:** Describe the research that was done on each LHC project: Alice, Atlas, CMS, and LHCb.

1. What do the acronyms stand for?
2. Discuss some details of each of the four experiments.
3. Discuss the history of what led scientists to begin each of the four experiments.
4. Discuss the results of each of the four experiments.

To receive full credit, all 4 questions above must be addressed.

\_\_\_\_**TOPIC 3:** Compare the Supersymmetry (SUSY) and Multiverse Theories.

1. Define Supersymmetry (SUSY) Theory.
2. Define Multiverse Theory.
3. Compare Supersymmetry (SUSY) Theory with Multiverse Theory.
4. Contrast Supersymmetry (SUSY) Theory with Multiverse Theory.

To receive full credit, all 4 questions above must be addressed.

**Specific Requirements:**

- Word count 400-600 words for honors physics. 300-500 words for level physics.
- Use MLA or APA format for citations and references.
- Use a word processor when writing your essay. Copy the text and paste in the WYSWYG editor in Canvas. Make sure the font is between 12 and 14 points before final submission.
- Honors must include a minimum of 2 authentic sources. Level must include a minimum of 1 authentic source.
- Include a title. Center the title on the top of your essay. Write in paragraph form.
- Use formal, scientific tone appropriate for the 11<sup>th</sup> grade.
- Turnitin score cannot exceed 25%.

**Rubric:**

Word count is 400-600 words for honors, 300-500 words for level	3.0 points
At least 2 citations and references are included for honors, 1 for level.	0.5 points
MLA or APA formatting for citations and references.	0.5 points
Written in formal, scientific tone appropriate for the 11th grade. Essay is mostly free of grammatical errors.	0.5 points
The essay includes an acceptable thesis and purpose statement.	0.5 points
Total	5 points

**Sample Thesis and Purpose Statements:**

Topic 1: The purpose of this essay is to learn more about the Large Hadron Collider (LHC). This paper will discuss details about the LHC including location, original construction, type of scientific conditions recreated, and expected scientific outcomes.

Topic 2: The purpose of this essay is to learn more about the research of each LHC project including Alice, Atlas, CMS, and LHCb. For each of these experiments this paper will define the acronyms, discuss the details, discuss the foundations, and describe the results and contributions to science.

Topic 3: The purpose of this essay is to learn more about supersymmetry (SUSY) and multiverse theories. This paper will define, compare, and contrast both SUSY and multiverse theories.