Science Journal Analysis

Using the supplied journal in the Google Classroom post, respond to the following questions.

1. What year was this paper/journal published?

   1905

2. Where was the journal originally published?

   It was published in Annalen der Physik.

3. What was the original title (i.e. the specific language) the paper was published under?

   It was published in german as Zur Elektrodynamik bewegter Körper

4. How many times has this paper been cited since it was published? (This is something you'll have to research)

   This paper has been cited 2266 times (english translation) and 7418 times (german translation). This is according to google's citation.

5. Einstein published many papers in a single year ("the miracle year" some called it). What were the papers that Einstein got published in 1905 and where in the order did this one fit?

   His papers, in order, were on the photoelectric effect, Brownian motion, theory of special relativity, and mass-energy equivalence. Special relativity was the 3rd paper in this series of papers.

6. There was no experiment done for this paper. However, Einstein does provide us with examples to demonstrate his reasoning. Describe an example he gives in section 2, *On the Relativity of Lengths and Times.*

   In the experiment, he had a rod moving with clocks on the end. He argues that a stationary person would not see the difference between the clocks and that they were synchronous, but a person moving with the rod would see a difference in time.

7. To your best estimation and a short description, what level of physics knowledge does one need to understand the material in this paper?

   Everything can be understood with very basic physics knowledge (such as velocity = distance/time). However, although the theory can be understood, the method for proof needs higher physics and math (such as Maxwell-Hertz Equations and partial derivatives).

8. Describe in 3-4 sentences why the journal is significant to our understanding of nature.

   This journal is significant because it disproved fundamental laws of physics (Newtonian laws) that were previously used as the basis of physics (especially for objects moving very fast). It changes the very perspective of time and how it is not constant, but relative. This also changes the future of space travel (such as using new calculations to determine travel time and amount of fuel like in Project Hail Mary).

9. One of the things that this paper inspired was the Twin Paradox. If you were to travel 12 lightyears to Tau Ceti (like Ryland Grace does in *Project Hail Mary*), and were able to return to Earth, would everyone you know be older than you, or the same age as you? For this hypothetical, you are assuming that you were able to travel at relativistic speeds to Tau Ceti and make it back within the lifespan of a human. (2-3 sentences please)

Everyone I know would be older than me. This is because time would slow down for me when traveling at a really fast speed in accordance with Einstein's theory. The people on earth and I would feel time moving the same way, but only when we compare time felt, will we know that relative to each other, time would slow down for the person traveling at relativistic speed.

10. Add the correctly formatted APA reference.

Einstien, A. (1905, June 30). Zur Elektrodynamik bewegter Körper. Annalen der Physik, 17(891)