

# **Dr. Carl Zapffe's Flying Interferometer Experiment**

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### **1.0 Introduction**

This paper describes the efforts by Dr. Carl Zapffe to convince NASA to support an experiment to test the experimental basis of Einstein's theory of relativity by placing a Michelson type interferometer in outer space. This was briefly discussed in a previous paper by the author, but did not investigate the story in detail. Here that omission will be corrected, as this paper will try to ascertain why Dr. Zapffe was unable to persuade NASA to consider the idea of an experimental test of relativity.

### **2.0 Background**

The materials used in this analysis were published by Dr. Zapffe in his paperback booklet with a daunting title that includes three fundamental equations of relativity physics. Here we will simply refer to it as "A Reminder". The title is drawn from the title of its most important paper, which has been made available at the GSJ. The title of the booklet illustrates an important point. As a communicator of ideas, Dr Zapffe was not the most elegant in communicating physical concepts, but he did have an entertaining writing style more suited to nonscientific subjects.

The objective of "A Reminder" was to publish its major paper, which had been consistently rejected by scientific journals, and to document this rejection process. Here we will consider the rejection of Dr. Zapffe's flying interferometer experiment by NASA, and inquire as to the basis of this rejection.

There were two distinct attempts to contact NASA. One took place in 1972, and the second in 1980. The first contact was rebuffed in an answer by Nancy W. Boggers, and the second was rebuffed by an answer provided by the unfortunate Dr. Thomas A. Much, who died in a mountain climbing accident less than two months after his reply to Dr Zapffe.

### **3.0 Objective**

The objective of this paper is to evaluate the reasons for rejection of the proposed experiment by NASA. The primary source will be the documents provided by NASA in their rejection statements, which were published in "A Reminder".

The thesis will be presented that the irksome character of the experimental evidence and the dogmatic acceptance of Einstein's theory of relativity were the reasons for rejecting the proposed experiment.

### **4.0 Dr. Zapffe's Letter To Nancy Roman**

In his first letter to Dr. Nancy Roman, the object was to seek help regarding two related ideas. Zapffe requested assistance in publishing his papers and hoped to interest NASA in his flying interferometer idea. The objective seemed to be to initiate discussions in a friendly way, as a request for NASA to be helpful to a researcher. The tone was uncertain and hesitant, and was clearly the result of trying to be humble in seeking help. These factors probably were responsible for why the letter did not produce the desired result. The answering letter was apparently written by a junior staff member Nancy Bogggers, and it is doubtful that anyone in NASA gave even the slightest time or effort towards considering Dr. Zapffe's request. That is evident from the fact that no clarification of any scientific points was requested. The letter prepared by Nancy Bogggers was a curt rejection of Dr. Zapffe's entire effort. Killing it even before it had time to get going.

The failure was surely because Dr. Zapffe had not presented a very good case. The contact seems to have been the suggestion of a Dr. Harrison as a result of a NASA contract with Dr Zapffe's research laboratory. Apparently Dr Harrison referred Dr. Zapffe to the astronomy department at NASA. Surely Dr. Zapffe was not asking for NASA to accept his idea, but only to obtain help on how to proceed.

The key statements of the reply provided by Nancy Bogggers of NASA were the following: "I cannot follow your arguments about why the existence of the magnetosphere invalidates the Michelson-Morley experiment and also why all of the other tests of special and general relativity are invalid....It is undoubtedly a similar inability to follow your arguments which have prevented the editors of scientific journals from accepting your contributions...Similarly, I cannot understand the experiment which you wish to perform. We fly interferometers in satellites and probes on a regular basis...which work as we expect them to."

These are all certainly valid comments, but no effort was made to ask for clarifications or additional details or to request a further personal contact to help clarify the proposed experiment. Essentially the letter was a polite rebuff. At the end there is provided some interesting comments on the Hafele-Keating experiment, which had not been completed: "As to the Hafele-Keating experiment I had not heard that it had been completed...however at best, the results of that experiment were expected to be marginal and difficult to interpret. The rumor is that they were exactly as predicted by the Einstein theory."

This final comment, which was not germane to the subject of the letter, suggests that the primary reason for the rejection of Dr. Zapffe's request was dogmatic acceptance of Einstein's theory. Even though the Hafele-Keating experiment was known to be "marginal", a positive result was expected to be produced and its validation of Einstein's theory was accepted based upon the "rumor" of its positive results.

The salient point of the response was that although it was stated that NASA regularly flies interferometers, no reference to an expert who could further evaluate the proposal was forthcoming. Hence, although NASA clearly had the expertise, the message was; the

experiment was unnecessary as relativity was already sufficiently proven. In March 1972, Dr. Zapffe sent a letter to Nancy Bogggers asking that further information be provided regarding her statement that flying interferometers, “work as they expect them to”. No reply was received.

### **5.0 The Letter To NASA Administrator Dr. Robert Frosch**

On July, 15 of 1980, Dr. Zapffe, sent a letter to Dr. Robert Frosch, NASA administrator. This was a much more polished letter. It gave references and a detailed argument within the letter. Its justification was the idea of the celebration of the Michelson centennial year, by performing an experiment. On August 21, 1980 a reply was received from Dr. Thomas A. Mutch, NASA associate administrator. It was a very succinct and negative reply.

It is entirely doubtful that Dr. Mutch spent any real time considering the proposed experiment. For being a trained scientist, he was absolutely certain that Dr. Zapffe’s thesis was entirely false. Key points of the letter are the following: “To date, no observations or measurements have been performed which would contradict that theory...there is, no evidence in support of the contention that this measurement is influenced by the observers presence in the Earth’s geomagnetic field...Therefore with the preponderance of evidence in favor of the hypothesis of the constancy of the speed of light, it would be difficult for NASA to justify the great expenditure of money and manpower necessary to perform the suggested test..”

On September 19, 1980, Dr. Zapffe sent a rebuttal letter to Dr. Mutch. No reply was received, and on October 5, 1980 Dr. Mutch was killed in a tragic mountain climbing accident. This ended the correspondence and the attempt to propose a decisive test of the hypothesis underlying the justification of Einstein’s theory of relativity.

### **6.0 Analysis And Discussion Of Dr. Zapffe’s Failure**

The purpose of this section is to take a look at the reasons for Dr Zapffe’s failure to obtain a positive response from NASA. First, it is clear that he did not take the correct path or procedure. That would have been to gain academic support for the idea through journal publications and conferences. His inability to publish any papers proposing the idea was of course one reason he sought help from NASA in his letter to Nancy Roman. Hence we should consider why there was no support from the academic journals. This answer is clear, they accepted Einstein’s theory as valid and finally proved, so there was no reason to publish anything contrary to this belief.

It would seem that the Hafele-Keating experiment was accepted as a valid experiment even though it was known to be marginal before hand. Yet it was performed, published and accepted as a validation of relativity, even though it was clearly not sufficiently accurate to be a valid experimental test of time dilation. Why then was it done? The answer clearly was that it was expected to prove relativity was valid. It could not possibility fail to do this, because as it was known, relativity was a valid theory. Hence

the experiment would prove the expected, and desired, result.

Now consider Dr Zapffe's proposed experiment. This was designed as a test of Einstein's theory, but it was not perceived as a desirable test of that theory. We wish to know why this is so? The answer must be that it was proposed in order to refute that theory. Now one wonders, why such a test should be rejected? This is a valid question of major importance. If we are to understand the scientific process correctly, an experiment should be proposed as a strong test of a theory so as to prove it false. This is Karl Popper's thesis. Yet we see very few experiments of this type being conducted. When an experiment is proposed, it should be done in order to validate a theory and not to falsify a theory. That is basically what Dr Mutch said in his letter. If NASA was going to do the experiment, they needed to be certain in advance that it will be a success, and not a failure. But success was defined as validating relativity as true.

This statement by Dr. Mutch is rather a strange one considering the actual purpose of science. He is saying we don't need another verification of special relativity because it wouldn't prove anything new. It will simply verify what we already know, and that is that the speed of light constancy hypothesis is true, so we don't need to spend money proving it again. But one wonders, if this is the real reason.

The main point made by Dr. Zapffe in his papers, was that the hypothesis used to prove the special theory of relativity was the existence of the Fresnel aether. However the other hypothesis of a geocentric type aether was never tested in any experiment. He also pointed out that some experiments contradicting relativity had been conducted, so that there was reason to perform the proposed experiment. Dr. Mutch ignored this argument and flatly stated that there was no evidence of this nature and that relativity was in fact correct. That was the essence of his reply.

## **7.0 Summary and Conclusion**

The main point of this paper was to look at the rejection by NASA of Dr. Zapffe's proposed test of special relativity by placing a Michelson type interferometer in space. The purpose of this was to place it in a situation where it would be clear that the instrument was in motion relative to the Earth's reference frame. In the earth based experiments of this type, the experiment only demonstrates that there is no movement of the earth relative to a sun centered aether, which is the hypothesis of the Fresnel aether. The geocentric hypothesis of the Stokes aether was never tested, and one of Michelson's goals was to test this hypothesis, using instruments on mountains.

NASA scientists rejected the proposed experiment twice. The first time on the basis that existing instruments in orbit did not show the effect, and the second time with the claim that the experiment would be fruitless and a waste of money. In both cases it is apparent that the idea was rejected because of the dogmatic acceptance of the special theory of relativity.

In conclusion it is curious that an experiment clearly designed to be a decisive test of relativity would be rejected on a scientific basis. The experiment was perceived negatively because its proponent was an aether advocate, and that is a disappointing fact. One wonders why the experiment was not perceived as a validation of relativity, designed to add to the impressive list of its successes. In reality it seems the idea was rejected because it was not perceived as a positive test of relativity, but as a negative test. But as Karl Popper says, it is the negative tests, or attempts at falsification, that are the true tests of a scientific theory. So in the final conclusion, it would seem that no actual test that tries to falsify relativity by an experimental test of the geocentric aether hypothesis has ever been conducted, and that all attempts to do such experiments have been prevented by the dogmatic belief that the theory is indisputably true.