Comments Related to a Statement by Frank Tipler

Bryan Strohm asked me to comment on a statement by Frank Tipler of Tulane University. Well regarded early in his career, Tipler published in cosmology, general relativity, and theoretical physics.

Tipler, a devout Catholic, is known for his "Omega Point" theory, which connects cosmology with ideas about the ultimate future of the universe and computational limits of physics, and for which he was invited to Rome for a meeting with the Pope.

I met Tipler at a seminar in the early 1990s, me as a member of a quantum theory research group at the University of Texas at Arlington during the time period 1982 to 1993. At that time there were several joint research physics projects between Texas at Arlington, LSU and Tulane.

Tipler's statement appears on page of his book, *Physics,* published in 1976 by Worth. The statement is found on page 744, where Tipler states that under certain conditions the force between two current carrying conductors violates Newton's laws of action and reaction.

Source of Tipler's Statement

After some analysis, I believe Tipler's statement to be derived from his knowledge of a series of experiments by Ampere.

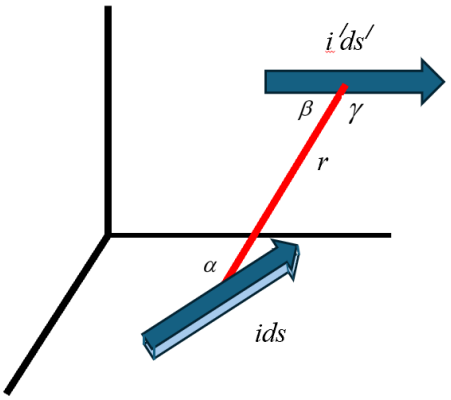
André-Marie Ampère (20 January 1775 – 10 June 1836) was a French physicist and mathematician, one of the founders of the science of classical electromagnetism, to which he referred to as "electrodynamics."

Ampere built apparatus on which he performed numerous experiments in electricity and magnetism. Ampere's electromagnetic theory is constructed from mathematical descriptions of experimental results.

James C. Maxwell pronounced Ampere's contribution to electromagnetic theory to be "of immense value" in the development of electromagnetic theory.

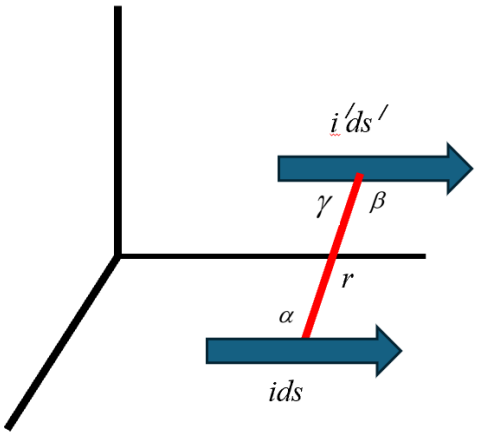
I believe Tipler's comment is related to Ampere's experiments involving magnetic forces between two current carrying wires as shown on the following pages.

GENERAL EXPERIMENTAL CONFIGURATION



$$F = \frac{ii'dsds'}{r^2}\left(\left(\sin\alpha\sin\beta\cos\gamma\right) - 0.5\left(\cos\alpha\cos\beta\right)\right)$$

EXPERIMENTAL CONFIGURATION 1



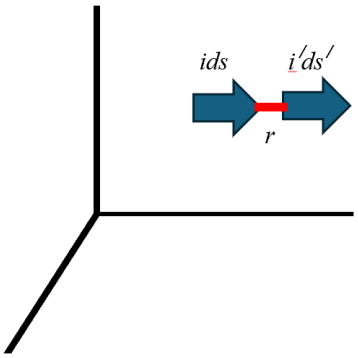
$$\alpha = \frac{\pi}{2}$$

$$\beta = \frac{\pi}{2}$$

$$\gamma = \frac{\pi}{2}$$

$$F = \frac{ii'dsds'}{r^2}\left(\left(\sin\alpha\sin\beta\cos\gamma\right)\right) = \frac{ii'dsds'}{r^2}$$

EXPERIMENTAL CONFIGURATION TWO



$$\alpha = 0$$

$$\beta = 0$$

$$\gamma = \frac{\pi}{2}$$

$$F = \frac{ii'dsds'}{r^2}\left(-0.5\left(\cos\alpha\cos\beta\right)\right) = -0.5\frac{ii'dsds'}{r^2}$$

General experimental configuration

As shown, the arrangements of two current-carrying elements ***i*** and ***i′***. The three angles specify the relative directions of current flow. The formula for the force between the current-carrying elements was derived from Ampere's many experiments.

Experimental Configuration one

Configuration one shows a "normal arrangement" of two elements with current flowing parallel and in the same direction. Ampere's equation predicts an attractive Newton force, as is seen in experiments.

Configuration two

I was made aware of this same experimental configuration and the resulting "scalar-wave" force in a classified disclosure by a BEA (British) engineer in 2011. The engineer showed a video of the experiment (he called "Ampere's hairpin experiment") performed by BEA in their scalar wave research.

The attractive Newtonian force of configuration one is now, in configuration two, a non-Newtonian repulsive force.

Experiments by Peter and Neal Graneau

Experiments analogous to configuration two were performed by Professor Peter Graneau (MIT electrodynamics and power laboratory) and published in peer-reviewed journals (see, for example *Longitudinal Magnetic Forces?* in J. Appl. Phys. 55, 2598 (1984).

Graneau also published research on US Navy rail gun experiments in which longitudinal forces were seen. These publications are available online.

A more recent publication by Dr. Neal Graneau (Peter Graneau's son) is *Direct Measurements of Longitudinal Forces in Wires, in Physics and Astronomy, May 12, 2026*.

Why Ampere is no longer cited

For a complete history of below, see *E. T. Whittaker, A Complete History of the Theories of Aether and Electricity- The Classical Theory*.

Ampere is among the first developers of electrodynamics. The Newton's mechanics framework formed the basis of Ampere's explanatory theory. The big change in this framework came with Faraday's "electromagnetic field", rendering the translation between explanations difficult at best.

The original Maxwellian theory is based on Faraday's ideas, but initially incorporated Ampere's experiments.

And the original Maxwell's equations were in the form of twenty equations expressed in the quaternion calculus.

And Maxwell, himself, eliminated several quaternion equations as being "unnecessary."

Then Oliver Heaviside later "stripped out" the vector portions of Maxwell's quaternions to form "equivalents" to Maxwell's quaternion electrodynamics, now comprising four vector partial differential equations.

How could Ampere and Maxwell-Heaviside be equivalent descriptions of electromagnetism?

Is Classical Electrodynamics Correctly Represented in Current Physical Theory

The short answer is "No."

Current physics is dominated by quantum mechanics. And early quantum mechanical theory includes mistaken assumptions when referencing electrodynamics.

These assumptions relate to the flow and interactions of photons and fields in a quantum mechanical setting.

In particular, mistakes were made by quantum pioneers P.A.M Dirac and Werner Heisenberg.

A discussion of this subject is far outside the scope of Bryan's request. Instead I will refer to a lecture by Hans Schantz, who is an expert in electrodynamics.

Schantz's talk was the keynote address before the 2026 IEEE International Symposium on Electromagnetic Compatibility, Signal and Power Integrity.

The talk was entitled *"How Electromagnetism and Quantum Mechanics Work and Where Physics Went Wrong."*

Thank you for considering my comments.

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September 16, 2026