

# On the Electrodynamics of Moving Bodies

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## Motivation

Since I was very young, I have always been fascinated with light. I thought about what would happen to my reflection in a mirror as I moved close to the speed of light. Would I see my reflection? What does Maxwell's theory of electromagnetic waves predict?

## Literature Review

This investigation will be based on the works of James Clerk Maxwell [2] and Isaac Newton [1]. In [2] Maxwell introduces the equations of electricity and magnetism in one complete theory. Newton had already presented in his *Principia* the laws of classical motion and gravitation [1].

## Problem to be Addressed

In this project I will reconcile Maxwell's equations for electricity and magnetism with the laws of mechanics by introducing major changes to mechanics close to the speed of light.

## Project Type, Resources Needed, etc.

My project is theoretical [*as opposed to experimental or computational*]. Therefore, I will only need a pen, paper, and my thoughts.

## References

- [1] I. Newton, *Philosophiae Naturalis Principia Mathematica*, New York: Viking, 1958.
- [2] J. C. Maxwell, *A Dynamical Theory of the Electromagnetic Field*, Philosophical Transactions of the Royal Society of London, 155 (1865) pp. 459-512 .