Game 9/27/21 Einstein's Papers

The Annus Mirabilis Papers

Einstein wrote 25 papers in 1905. 4 of these were grouped together and labeled as the Annus Mirabilis Papers and were revolutionary to modern day physics and helped people create a very foundational basis of space, time, mass, and energy.

On a Heuristic Viewpoint Concerning the Production and Transformation of Light

Photoelectric Effect

Published on June 9th in 1905, this paper's content covered a lot about the photoelectric effect and how it applied to black bodies (something that can absorb all colours of light). He used Maxwell's Equations along with Planck's derivation of black-body radiation to explain the energy propagation of light rays as it moves across space. The concepts that he briefs upon contradicts some of what Maxwell established for Electromagnetic behaviour.

On the Motion of Small Particles Suspended in a Stationary Liquid, as Required by the Molecular Kinetic Theory of Heat

Brownian Motion

Published on July 18th in 1905, this paper is based on the kinetic theory of gases and would provide evidence of the atom. This critical paper would be the new foundation chemists and physicists alike as it changed the whole way people understood things at the low atomic level for the respective subjects.

On the Electrodynamics of Moving Bodies

Special Relativity

Publised on September 26th of 1905, this paper covers his well known special theory on relativity and the speed of light. This paper only refers to 5 other scientists and those would be Isaac Newton, Maxwell, Henirch Hertz, Christian Dopplar, and Hendrik Lorentz. Besides that this is complete and original work with his own research and findings. This would become the foundation for years to come.

Does the Inertia of a Body Depend Upon Its Energy Content?

Mass–Energy Equivalence

Published on the 21st of November in 1905, this paper would establish the world famous eqation of `E=mc^2` and shows how energy of a body at rest relates to mass and the speed of light.

On The Movement of Small Particles Suspended in Stationary Liquids Required By The Molecular-Kinetic Theory of Heat

Statistical Mechanics and Brownian Motion

Published March 17th in 1905, this paper covers how diffusion at a macrosopic scale matches what can be seen as "random" at a microscopic scale and how a force is exherted on each individual particle, he shows how an object suspended can simulate an atom in equalibrium with many smaller components colliding randomly and causing entropy.

Overall

I was blown away by how many reviews he had written for other people's works in 1905 alone, and that's ignoring all the others he has done in years before and after. The sheer amount of knowledge he had for the subjects he studied truly was shown in these reviews and papers. I attempted reading a few of them on Harvard's website linked below, but the content was so beyond my head I was simply lost.

Sources

- https://en.wikipedia.org/wiki/List_of_scientific_publications_by_Albert_Einstein
- https://en.wikipedia.org/wiki/Annus_Mirabilis_papers
- http://soft-matter.seas.harvard.edu/index.php/On_The_Movement_of_Small_Particles_Suspended_in_Stationary_Liquids_Required_By_The_Molecular-Kinetic_Theory_of_Heat
- https://einsteinpapers.press.princeton.edu/