

An Overview of the Hydrogen Atom Fundamental Resonance States (Expanded republication in BookPI)

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Abstract: In the 1920's, Louis de Broglie's observation that the integer sequence that could be related to the interference patterns produced by the various electromagnetic energy quanta emitted by hydrogen atoms was identical to those of very well known classical resonance processes, made him conclude that electrons were captive in resonance states within atoms. This led Schrödinger to propose a wave function to represent these resonance states that still have not been reconciled with the electromagnetic properties of electrons. This article is meant to identify and discuss the electromagnetic harmonic oscillation properties that the electron must possess as a resonator in order to explain the resonance volume described by the wave function, as well as the electromagnetic interactions between the elementary charged particles making up atomic structures that could explain electronic and nucleonic orbitals stability. An unexpected benefit of the expanded space geometry required to establish these properties and interactions is that the fundamental symmetry requirement is respected by structure for all aspects of the distribution of energy within electromagnetic quanta.

This chapter does not propose an alternate approach to quantum mechanics, but rather an addition to the already established descriptions of the orbital resonance states provided by Schrödinger's wave function, Heisenberg's statistical distribution method and Feynman's path integral, involving a clear description of the electromagnetic resonators responsible for the establishment of the related resonance volumes, meant to lay the groundwork for the eventual establishment of more elaborate wave functions that will for the first time completely account for the electromagnetic nature of these resonators.

Keywords: Wave function; electron resonance states; elementary electromagnetic particles; electromagnetism; hydrogen atom.

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[*Michaud, A. \(2020\) Electromagnetism according to Maxwell's Initial Interpretation.*](#)

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and the analysis and resolution from the trispatial perspective of the "*absolute motion / relative motion*" conundrum previously published in Section titled "*The photon default self-guiding in straight line and self-propelling at the speed of light*" of Reference:

[Michaud A \(2016\) *On De Broglie's Double-particle Photon Hypothesis*. J Phys Math 7: 153. doi: 10.4172/2090-0902.1000153.](https://doi.org/10.4172/2090-0902.1000153)

Translations to French, Spanish and German of these papers are available from the following unpublished index:

[The 3-Spaces Model - \(Electromagnetic Mechanics\)](#)