

# A Formalism to Quantify Light Matter Interaction Without Introducing the Photon Notion

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In this paper we illustrate how it is possible to formalize the interaction of light with an electron without needing to define the notion of photon. We link this kind of interaction to a fixed "quantity" of light. This means that this interaction take place once a stationary "quantity" of light circulate to the neighborhood of the electron.

To explain this phenomena A. Einstein use to consider light as photon package. Here we consider light as an electromagnetic wave without any photon aspect but we introduce a new electron conception that explain both the light-electron interaction and the atomic classification. This new conception considers the electron (or any elementary particle) as a particular light manifestation. Precisely as a particular aspect of light propagation. Light and elementary particles are then seen as entities of the same nature. Therefore it is easy to formalize their mutual interactions without introducing the notion of photon.

This new electron conception don't goes in contradiction with the standard atomic model conception. Hence it present an interesting approach to give a unique formalism explaining both the light-matter interactions and the standard atomic model. In fact considering light and particles entities of the same nature allows not only to avoid introducing the photon notion but also to deduce that the same rules must govern both light-matter interactions and the standard atomic model conception.