

Abstract Submitted  
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**A Classical Explanation of the Photoelectric Effect** JAMES ESPINOSA<sup>1</sup>, Rhodes College, JAMES WOODYARD, West Texas A&M University — In 1905, Albert Einstein explained the photoelectric effect by introducing the idea of the photon. His theory explained three key features of experiments. The intensity of the impinging light determines the amount of current generated. The frequency determines whether any current is generated at all. Finally, the electricity flows almost instantaneously. Classical physics was unable to account for all of these experimental results. This failure helped convince physicists of the existence of the photon. After reviewing this history, we will present a purely classical model that accounts for all the prominent features of the photoelectric effect and argue that this experiment does not demonstrate the existence of the photon. The key ingredient will be the use of Walter Ritz's atomic model, which can reproduce numerous atomic spectra. The atom will absorb energies at discrete levels while the electromagnetic waves will remain continuous.

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