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## 4P22 - Comparisons of a Quantum Photoemission Model with Three-step Model and Fowler-Dubridge Model

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Photoemission is one of the fundamental processes to produce electron beams and is important to particle accelerators, electron microscopy, and vacuum electronics [1]. Recently, an analytical model for photoelectron emission from metal surface illuminated by a laser field was developed, by solving the time-dependent Schrödinger equation exactly [2, 3]. The model includes the effects of dc electric field and laser electric field (of arbitrary frequency and strength), as well as metal properties (Fermi energy, work function). The model shows good agreement with experiments [3]. In this study, we compare this quantum model with existing classical models for photoemission, including the three-step model and Fowler-Dubridge model [4-7]. The validity and limitations of each model will be examined.

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