

Abstract Submitted
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Theoretical studies on a new pattern of laser-driven systems: towards elucidation of direct photo-injection in dye-sensitized solar cells¹
KENJI MISHIMA, KOICHI YAMASHITA, The University of Tokyo — We theoretically and numerically investigated a new type of analytically solvable laser-driven systems inspired by electron-injection dynamics in dye-sensitized solar cells. The simple analytical expressions were found to be useful for understanding the difference between dye excitation and direct photo-injection occurring between dye molecule and semiconductor nanoparticles. More importantly, we propose a method for discriminating experimentally dye excitation and direct photo-injection by using time-dependent fluorescence. We found that dye excitation shows no significant quantum beat whereas the direct photo-injection shows a significant quantum beat.

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