

Transparency in two-level spin systems induced by a longitudinal field

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Abstract

In an electron-spin two-level system, a bichromatic radiation field, which consisted of a radio frequency field and a transverse microwave field, was discussed. It was found that the bichromatic radiation field induced multiple photon transitions with the photons absorbed from the microwave and radio frequency fields. Under such a bichromatic radiation field, the two-level spin system becomes transparent. Based on a toggling-frame approach, an analytical description of the multiple photon processes and the resulting transparency effects was given.

<http://dx.doi.org/10.1103/PhysRevA.69.033809>
