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Alpha Decay in Intense Laser Fields

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We calculate the effect of intense laser fields on nuclear alpha decay process, using realistic and quantitative nuclear potentials. We show that alpha decay rates can indeed be modified by strong laser fields to some finite extent. We also predict that alpha decays with lower decay energies are relatively easier to be modified than those with higher decay energies, due to longer tunneling paths for the laser field to act on. Furthermore, we predict that modifications to angle-resolved penetrability are easier to achieve than modifications to angle-integrated penetrability.

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