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Magnetic dipole-dipole transition for scintillation quenching

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A magnetic dipole-dipole interaction is proposed as a scintillation quenching mechanism. The interaction rate follows R^{-6} as the electric dipole-dipole interaction in Foster resonance energy transfer theory. The proposed mechanism causes a long-range resonance energy transfer, and the resonance condition is that the spins of donor and acceptor electrons both flip, and the energy level differences are the same. When oxygen or organic molecules including heavy elements are dissolved in a liquid scintillator, these requirements are easier to satisfy. The proposal in the paper adds a new approach for scintillation quenching in liquid scintillators.

Collaboration you are representing

Author: WANG, Zhe (Tsinghua University)

Presenter: WANG, Zhe (Tsinghua University)

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