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Fractional revivals for position-dependent-mass systems

The concept of position-dependent-mass (PDM) is important in many physical situations, such as, transport of charge carriers in semiconductors of nonuniform chemical composition. However, quantum mechanical description of such systems is challenging because of non-uniqueness of quantum Hamiltonian within the same many-body approximation and due to mathematical complexity in finding the analytic solutions. We study the phenomena of wave packet quantum revivals and fractional revivals in such systems by first obtaining the analytic solutions of PDM Schrodinger equation. We observe the measurable shifts in the structure of fractional revivals as a function of spatially varying mass.