

ELECTRON RESONANCE STATES IN OPENED  
SPHERICAL TWO-BARRIER  
NANOHETEROSTRUCTURES

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The energies of electron resonance quasistationary states in opened two-barrier spherical nanoheterostructures are obtained within the effective mass approximation using the  $S$ -matrix theory. Numerical calculations are performed for the HgS/CdS/HgS/CdS/HgS nanosystem. The  $S$ -matrix poles in the complex plane of energy are studied. The quasistationary state energies and electron lifetimes in these states are obtained as functions of nanosystem geometric sizes. It is shown that the electron lifetime in an excited quasistationary state quasiperiodically depends on the sizes of nanoheterosystem wells.