

ELECTRON ENERGY SPECTRUM
IN A SPHERICAL HgS/CdS QUANTUM DOT
WITH A SMOOTH BOUNDING POTENTIAL

V.A. Holovatsky

Yu. Fedkovich Chernivtsi National University
(2, Kotsyubynsky Str., Chernivtsi 58012;
e-mail: *theorphys@chnu.cv.ua*)

S u m m a r y

Within the effective mass approximation, the energy spectrum of an electron in a spherical quantum dot (QD) with the smooth behavior of the potential energy and the effective mass of a quasi-particle at the boundary between semiconductor media is calculated. It is shown that relative corrections to the electron energy caused by a spread boundary between two media are non-monotonic functions of QD radius. These corrections increase rapidly with the QD radius, reach a maximum, and then slowly decay when the radius becomes large. Calculations reveal that the relative corrections for different energy levels of the electron in the spherical QD become closer to each other with increasing the QD radius.