

題名	Five and three quantum dot systems as apparatuses for measuring energy levels
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概要	<p>A quantum dot (QD) system provides various quantum physics of nanostructures. So far, many types of semiconductor QD structures have been fabricated and investigated experimentally and analyzed theoretically. Presently, QD systems have attracted considerable attention as units for the qubit system of quantum computers. Therefore, it is vital to integrate QD systems as measurement devices in addition to qubits. Here, we theoretically investigate the side QD system as a measurement apparatus for energy levels of the target QDs. We formulate the transport properties of both three and five QDs based on the Green's function method. The effects of the energy difference of two side QDs on the measurement current are calculated. The tradeoff between the strength of the measurement and the back action induced by the measurement is discussed. It is found that the medium coupling strength of the three QDs is appropriate for reading out the difference of the two energy levels.</p>