

応用物理学会北海道支部
会員各位 殿

平成15年8月14日

講演会のお知らせ

下記により講演会を開催致しますので、多数ご参加下さいますようご案内申し上げます。
なお、日程が変更になりましたのでご注意ください。

記

演題 Emission and Absorption of Single Semiconductor Quantum Dots
講師 Prof. Jeremy J. Baumberg
(University of Southampton, UK)
日時 平成15年8月28日(木) 11:00~12:00
場所 北海道大学 大学院工学研究科量子物理工学専攻会議室 A3-62
主催 応用物理学会北海道支部

講演の要旨

Use of self-assembly techniques now allows us to create nanometer-sized chunks of semiconductor in which the electrons are confined into discrete energy levels. Hence their frequent description as "artificial atoms", with theoretical application in many areas of quantum technologies. Our recent experiments on single InGaAs quantum dots at low temperatures shows how much they resemble atoms, and how much they differ.[1] Both emission and absorption of light from a number of low-energy levels in many different quantum dots is resolved. Using ultrashort pulses, single pairs of electrons and holes can be excited in charged or uncharged quantum dots, and their quantum-mechanical nature revealed through their Rabi oscillations increasing the light level alternately produces more and then less absorption. Coupling such quantum emitters to high-finesse cavities can produce entirely new sorts of optical device with nonlinearities at the one photon level.

[1] "Coherent Spectroscopy of Optically-Gated Charged Single InGaAs Quantum Dots",
L Besombes, JJ Baumberg, J Motohisa, Phys. Rev. Lett. 90, 257402 (2003).

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