124. Title: Exciton-polariton light-semiconductor coupling effects

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Abstract: The integrated absorption of an excitonic resonance is a measure of a semiconductor's coupling to an optical field. The concept of an exciton-polariton expresses the non-perturbative coupling between the electromagnetic field and the optically induced matter polarization. Ways to alter this coupling include confining the light in optical cavities and localizing the excitonic wavefunction in quantum wells and dots, which is illustrated by quantum strong coupling between a single dot and an optical nanocavity. Positioning quantum wells in periodic or quasiperiodic lattices with spacing close to a half wavelength results in pronounced modifications to the light transmission. Light-matter coupling can also be used to generate and interrogate an exciton population, for example by the recently developed technique of absorbing terahertz radiation.