

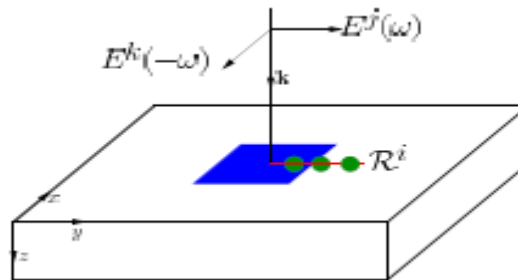
BENEMÉRITA UNIVERSIDAD AUTÓNOMA DE PUEBLA



INSTITUTO DE FÍSICA
“Luis Rivera Terrazas”



SEMINARIO
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“Optical coherent current control at surfaces: theory of injection current and spin generation”

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We present a study of optical coherent control of injection currents and spin generation at surfaces. First we show that the injection current is a new optical effect that will serve as a surface sensitive probe of fundamentally and technologically important cubic semiconductors with both bulk inversion symmetry, (such as cubic diamond $\bar{6}m2$ or $\bar{6}$), and non-centrosymmetric systems, (such as zinc-blende symmetry $\bar{4}3m$). In crystals with any of these symmetries this effect vanishes in the bulk, but it is allowed in surface regions due to the breaking of the bulk symmetry there. Second, we present a study of electron spin-generation onto several semiconductor surfaces due to optical excitation above the direct band gap with circularly polarized light. The effects are shown to be essentially sensitive to surface structure, show interesting behavior as a function of the energy of the incident light, and the calculated magnitudes indicate that both effects should be easily observable. Finally, a “layer-by-layer” analysis provide detailed access to the surface properties through explicit separation of the contributions coming from different layers of the system.

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**Viernes 07 de Junio de 2013
13:00 Hrs.**