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Interface Roughness-Induced Intrassubband Scattering in a Quantum Well Under an Electric Field

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Abstract: The scattering rates in the lowest subband in a quantum well are calculated for interface roughness scattering when an electric field is applied perpendicular to the layer plane. It is found that the interface roughness scattering rate increases with increase in the electric field. The electric field changes the interface roughness scattering rates drastically in thick QWs compared with those for the zero-field case. This behaviour in the scattering rate gives a new degree of freedom in regions of interest in device applications.

Key Words: interface roughness, intersubband

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