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InAs/GaAs

electrons

holes

electron loading

hole loading

10 eV

500 1000 Å

s, p, d, ...

$\approx 200 \times 40 \text{ Å}$

InGaAs/GaAs

$J_{ee} \approx$

$\Delta\epsilon \approx$

$J_{hh} \approx$

$\Delta\epsilon \approx$

20 meV

smaller

50 - 70 meV

15 - 25 meV

10 - 20 meV-

InGaAs/GaAs

p, p, p, d

$$\begin{aligned}
 & \left(\begin{array}{cc} J_{ij} & K_{ij} \\ & \end{array} \right)_{i,j} \\
 & \Delta(N-1, N) \\
 & \Gamma_X L \\
 & \Delta_{\text{HF}}(N-1, N)
 \end{aligned}$$

1. $\frac{d}{dx} \ln(x^2 + 1) = \frac{2x}{x^2 + 1}$

$$\delta_{p_1, p_2} \sim \delta_{p_2, d_1} \sim \delta_{p_1, p_2} \sim \delta_{p_2, d_1}$$

$$\delta_{p_1, p_2} \sim (0.3 - 0.5) J_{ss} \quad \delta_{p_2, d_1} \sim (0.2 - 0.3) J_{ss}$$

$$\delta_{p_1, p_2} \sim 0 \quad \delta_{p_2, d_1} \sim 0$$

$$L_z = +1 \quad L_z = -1$$

$$B = 0$$

$$L_z = +1 \quad L_z = -1$$

$$L_z = +2 \quad L_z = -2$$