

## Effect of the Structural Parameters on Subbands of Fibonacci $\text{Al}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$ Superlattices

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This work is to study the effect of the variation of structural parameters on the band structure in the quasiperiodic Fibonacci superlattices  $\text{Al}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$  using the formalism of the transfer matrix and Airy functions [1]. Our results show that increasing the width of Fibonacci's wells allows to the confinement of subminibands with a widening of minigaps, this causes a consistent and coherent fragmentation. The barrier thickness of Fibonacci  $b_f$  acts on the width of subminibands by controlling the interaction force between neighboring eigenstates. Its increase gives rise to singularly extended states. The barrier height Fibonacci  $V_f$  permit to control the degree of structural disorder in these structures [2]. The variation of these parameters permits the design of laser with modulated wavelength [3].

**Keywords:** Transmission coefficient – Quasiperiodic superlattices - Singularly localized and extended states - Structural parameters - Laser with modulated wavelength

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