Optimal Capping Layer Thickness for Stacked Quantum Dots XI-
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gineering, UCLA, Los Angeles, CA 90095 — We study the effect of strain on the
vertical and lateral self-organization of nanoscale patterns and stacked quantum
dots during epitaxial growth. The computational approach is based on the level set
method in combination with an atomistic strain code. Strain changes the energetics
of microscopic parameters during growth, and thus determines the nucleation sites
and the growth of islands and dots. Our results show that strain can lead to vertical
alignment as well as lateral organization. Moreover, our simulations suggest that
there is an optimal thickness of the capping layer to get the best alignment and most
uniform size distribution of stacked quantum dots.

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