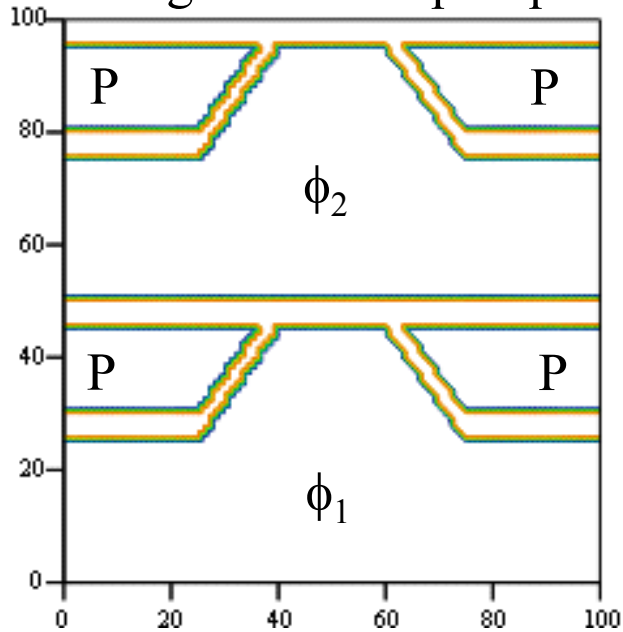


# OPCCD potential, 3D structure

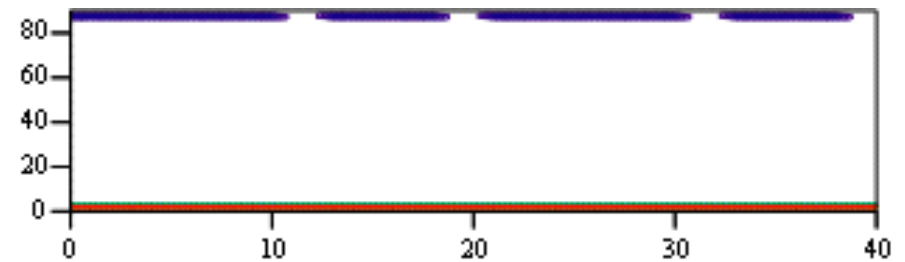
- Introducing asymmetry in the OPCCD by using shaped gates.
- Looking down at top of pixel:



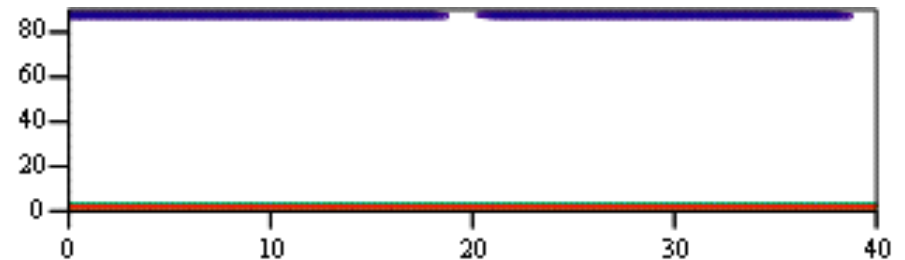
- $\phi_1$  and  $\phi_2$  are the two gates, with no overlap here.
- P is the pedestal gate.

- Sections:

◆ Normal to gates, pixel edge:

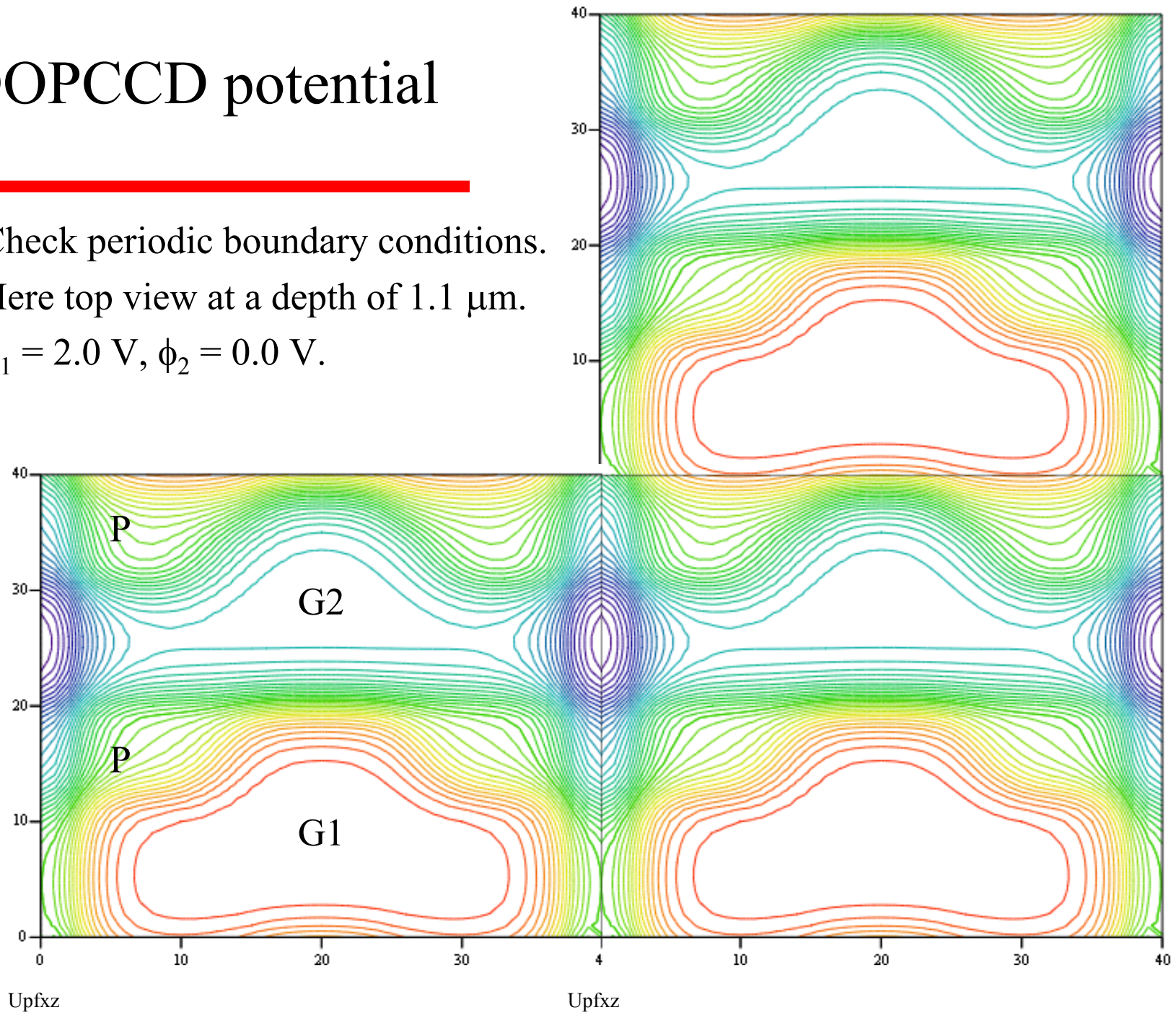


◆ Normal to gates, pixel centre:



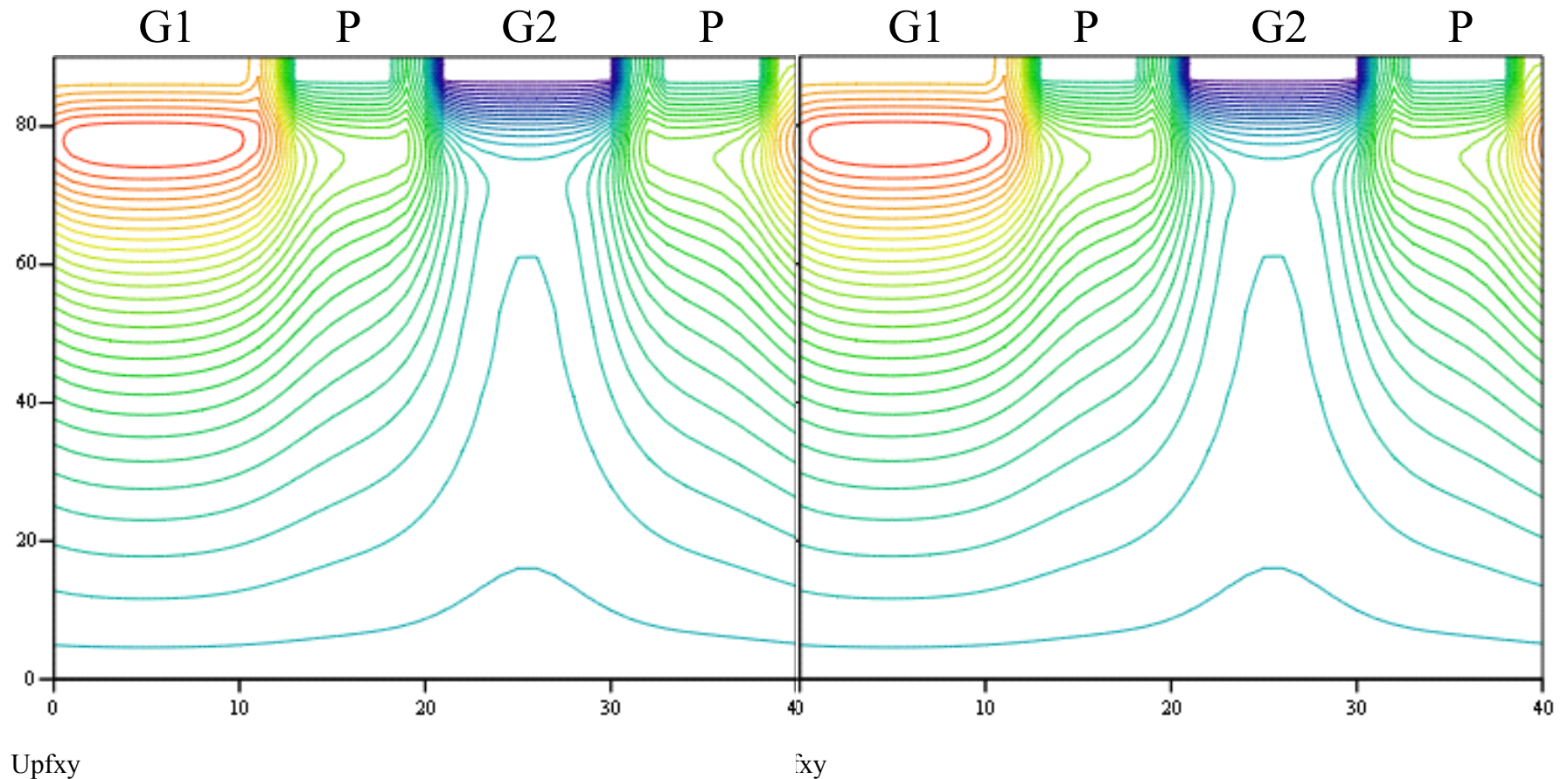
# 3DOPCCD potential

- Check periodic boundary conditions.
- Here top view at a depth of 1.1  $\mu\text{m}$ .
- $\phi_1 = 2.0 \text{ V}$ ,  $\phi_2 = 0.0 \text{ V}$ .



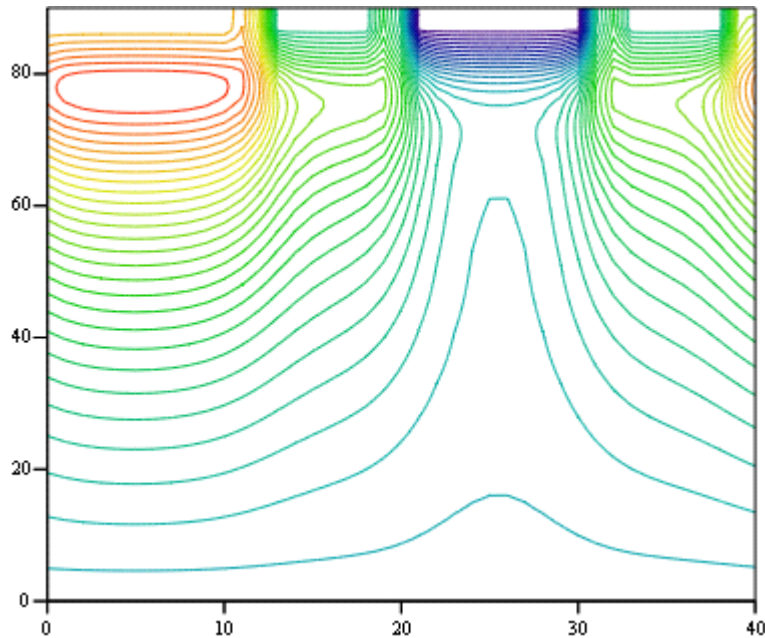
# 3DOPCCD potential

- Check boundary conditions.
- Here normal to gates, close to left hand edge of pixel.



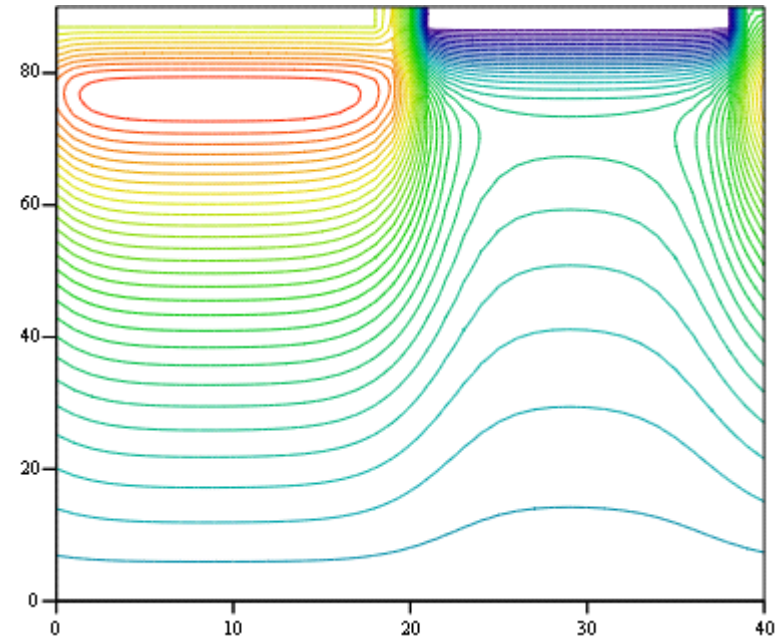
# 3DOPCCD potential

- $\phi_1 = 2.0$  V,  $\phi_2 = 0.0$  V, with “ground” plane 4  $\mu\text{m}$  below Si surface at 0.8 V.
- Normal to gates, near pixel edge:



Upfxy

- Normal to gates, pixel centre:

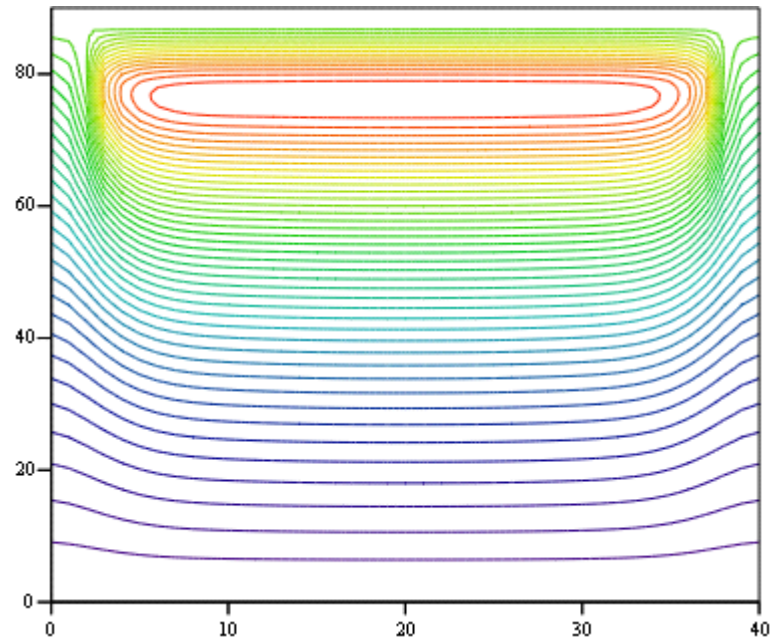


Upfxy

# 3DOPCCD potential

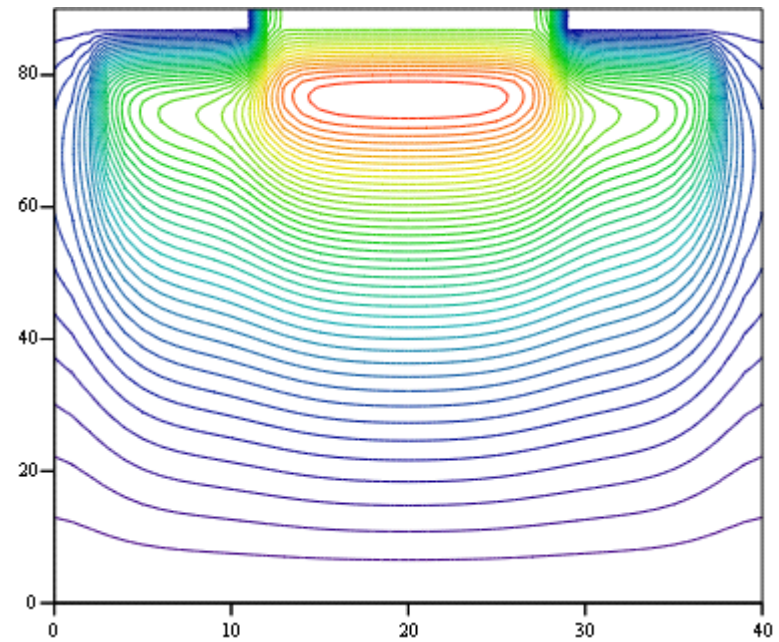
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■ Along gates, under G1:



Upfyz

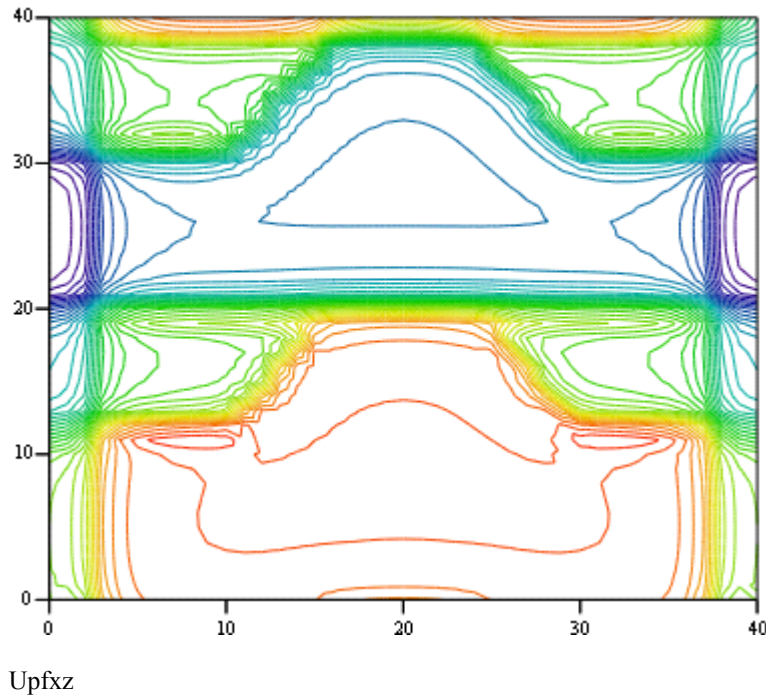
■ Along gates, under P and G1:



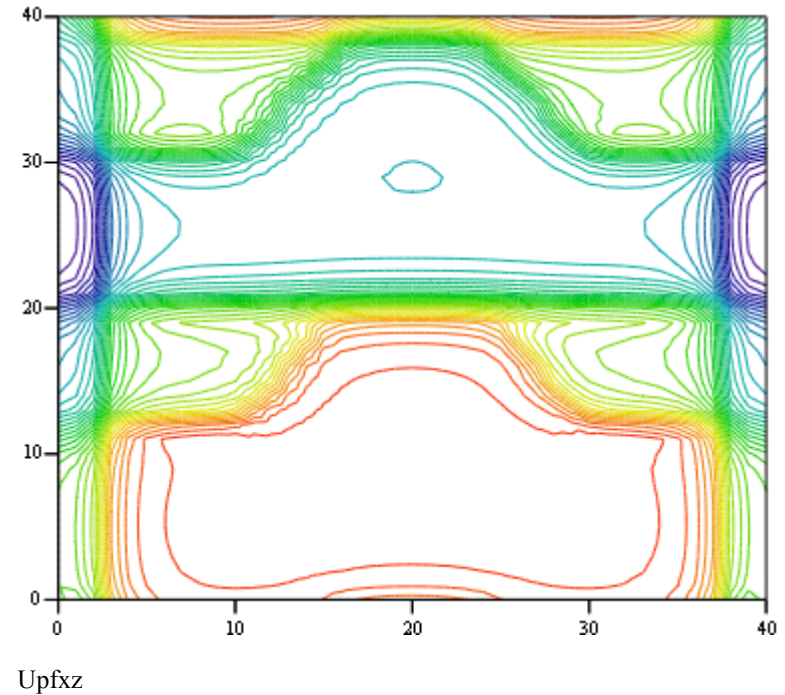
Upfyz

# 3DOPCCD potential

- Horizontal, just below gates (0.2  $\mu\text{m}$  depth):



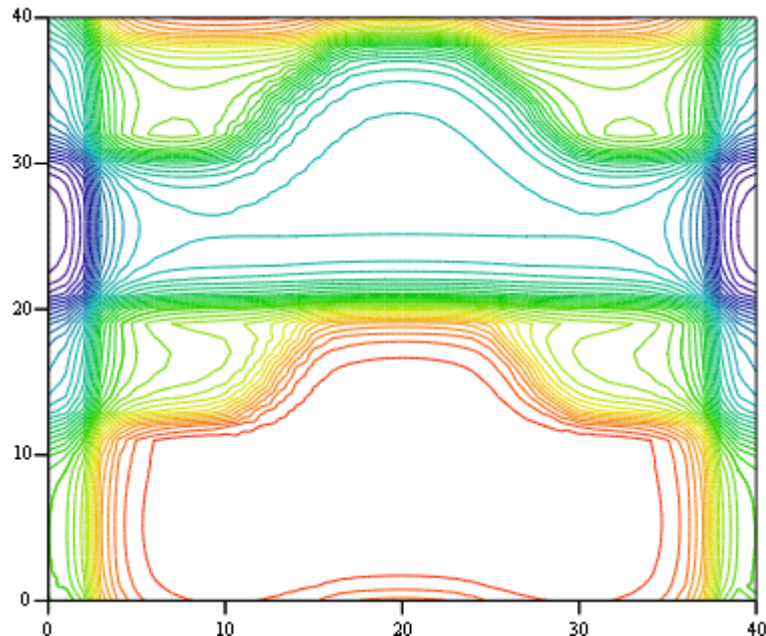
- Horizontal, centre of buried channel (0.3  $\mu\text{m}$  depth):



# 3DOPCCD potential

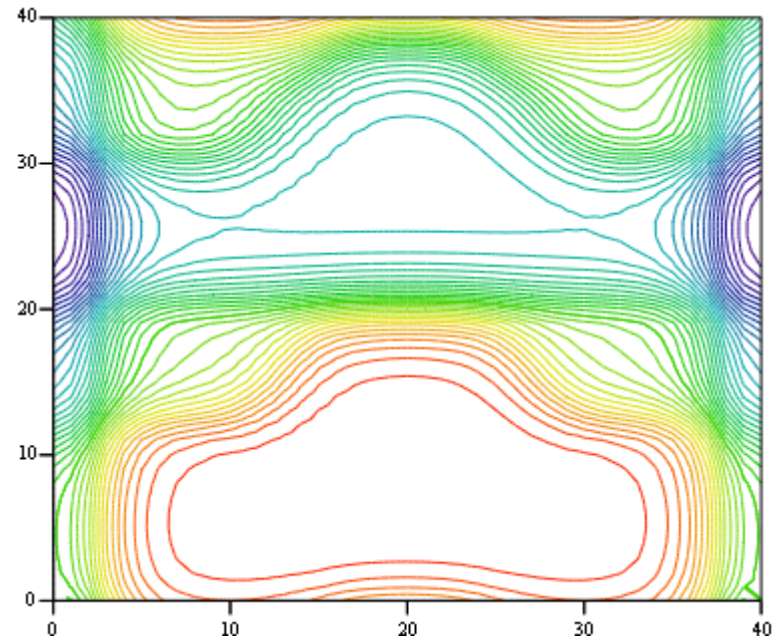
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- Horizontal, “bottom” of buried channel (0.4  $\mu\text{m}$  depth):



Upfxz

- Horizontal, below buried channel (1.0  $\mu\text{m}$  depth):



Upfxz