

MICRO-523: Optical Detectors

Week Six: CCD cameras – Exercises

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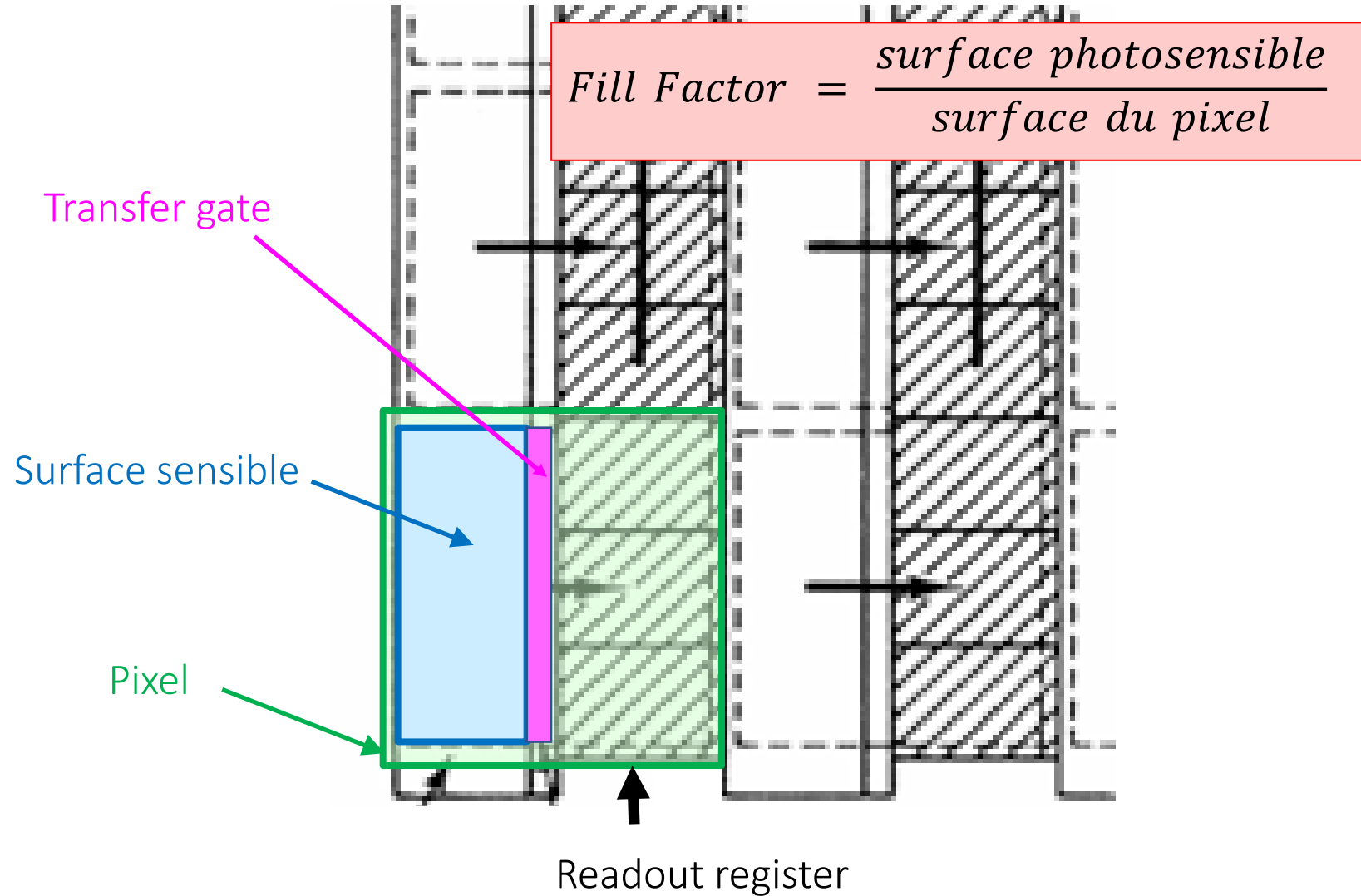
TAs: Samuele Bisi, Kodai Kaneyatsu

The logo of the École Polytechnique Fédérale de Lausanne (EPFL), consisting of the letters 'EPFL' in a bold, red, sans-serif font.

Outline

- 6.1 Consumption of CCDs
- 6.2 Fill factor
- 6.3 Charge transfer efficiency

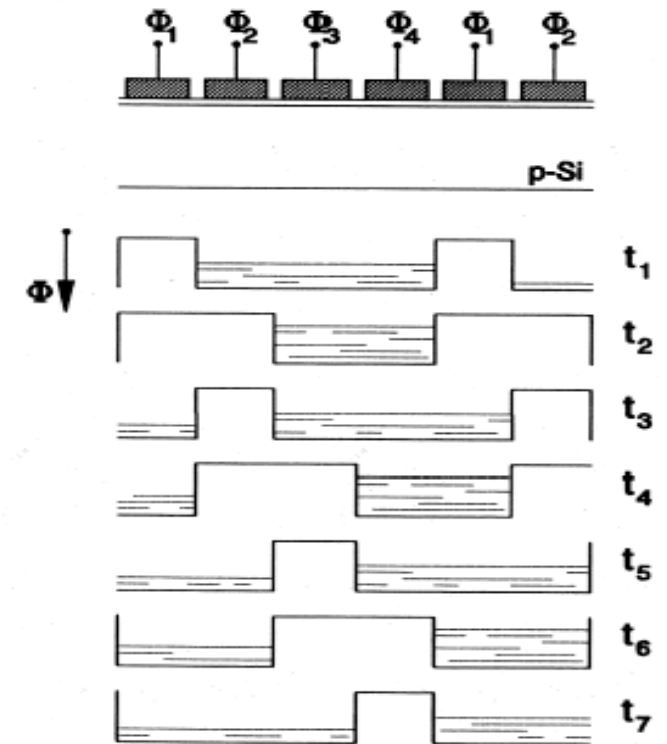
Exercise 6.2: Fill Factor



Exercise 6.3: Charge Transfer Efficiency CTE

- CTE: Charge Transfer Efficiency = ability to transfer all the charge from storage site to storage site
- (1-CTE) Charge Transfer Inefficiency

The net efficiency varies with the pixel position in the array. The farthest pixel from the sense node suffers higher loss: For a **1,000x1,000 pixels sensor with 4 phases**, the charge packet farthest from the output has to travel 2,000 pixels or **pass through 8,000 wells**.



→ Which CTE is needed to keep the information in the right cell after several thousand transfers?