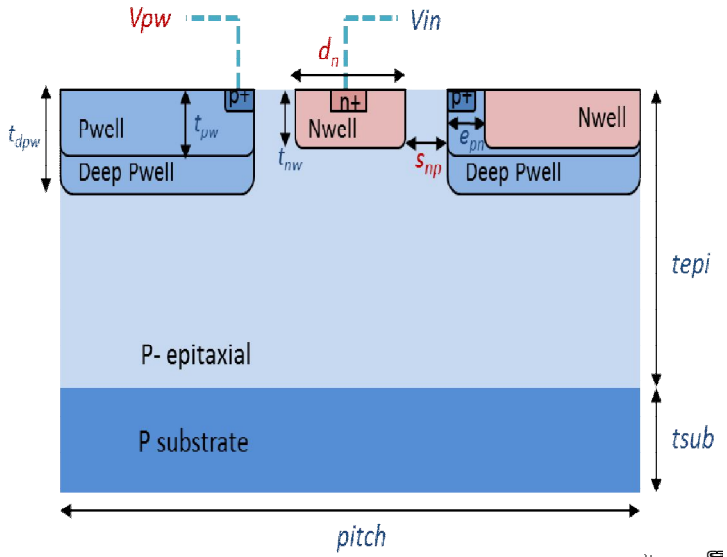
Simulation details

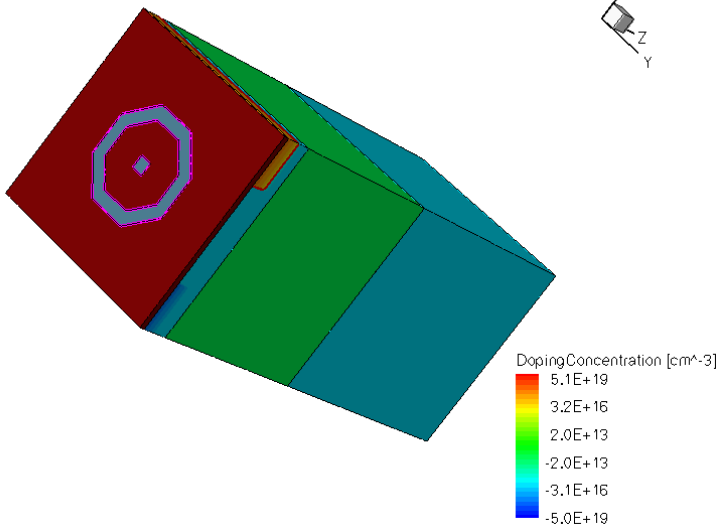
- **Single model→Pixel array →Irradiation**
- **Tools : Sentaurus TCAD**
- **Properties:** leakage current, thickness of depletion layer , signal intensity, collection time, charge distribution

- **Technology?**
  TowerJazz 0.18, Epi. thick & resistance, 18um & 1kΩ
- **Structure?** MAPS same with MOST1
  Fixed or not? Entire structure: oxide, isolation(STI) etc.
- **Shape and Size? Change or not?**
  pitch size , n well, guard ring, space
- **Bias voltage? Change or not?**
  1.2V or 3, 5, 8 ,10?
- **Pixel Array ?**
  3*3 or 5*5, or?
- **Irradiation dose: 1Mrad?**
  Total ionizing dose:TID impact: trapping charge in the Oxide, trapping charge at the interface
  But Sentaurus TCAD: Radiation model and the Traps model don't work in oxide.
  Add trapping charges in the oxide and interface directly.
  before and after: leakage current, signal intensity, charge distribution, ect

Mei Zhao, 2018.6.4

MOST1





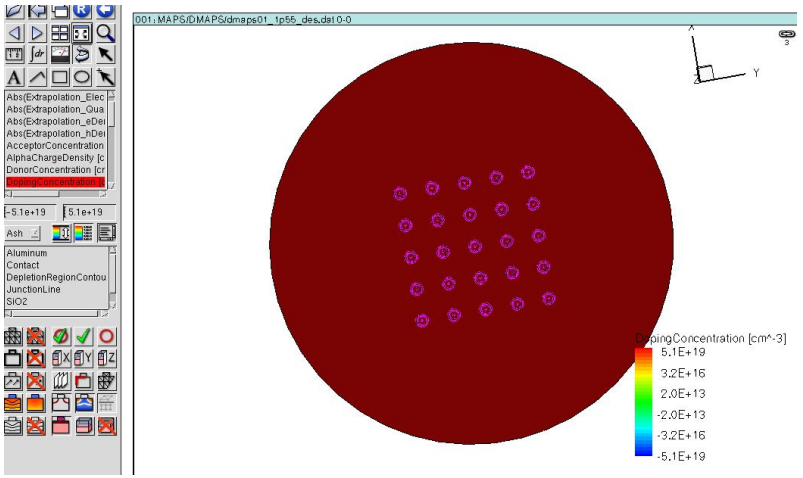
- 尺寸列表：

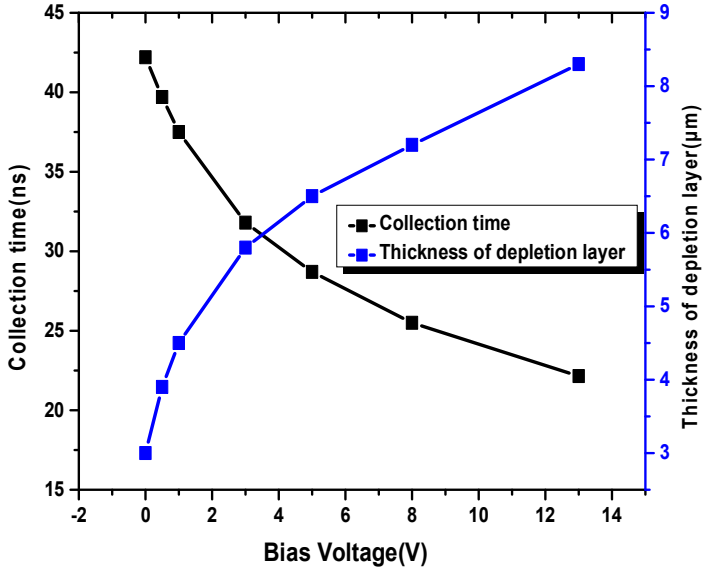
Sector	Shape	Diameter	Spacing	Structure
SF1	octo N, octo P	2 μm	2 μm	2T
SF2	octo N, sq P	2 μm	2 μm	2T
SF3	sq N, sq P	2 μm	2 μm	2T
SF4	octo N, sq P	1 μm	2.5 μm	2T
SF5	octo N, octo P	3.6 μm	1 μm	2T
SF6	octo N, sq P	3.6 μm	1 μm	2T
SF7	octo N, sq P	2.6 μm	1.5 μm	2T
SF8	octo N, sq P	2 μm	1.8 μm	2T
SF9	octo N, sq P	1 μm	2.3 μm	2T
SF10	octo N, sq P	2.6 μm	2.2 μm	2T
SF11	octo N, sq P	2 μm	2.5 μm	2T
SF12	octo N, sq P	1 μm	3.0 μm	2T
SF13	octo N, sq P	2 μm	2 μm	3T
SF14	octo N, sq P	3.6 μm	1 μm	3T
SF15	octo N, sq P	2 μm	2 μm	4T
SF16	octo N, sq P	3.6 μm	1 μm	4T

From Ying Zhang

MOST1

- 5*5 pixel array model





Diode surface	Pitch size	Footprint	Epi. thick & resistance
4 um^2	16×16 um^2	20 um^2	18 um Epi & 1k Ω
			No Epi. & 700 Ω