

NitroStrip project RD50

IEKP, KIT

Irradiation according to the project

Irradiation and measurement plan:

■ Fluences:

- $1e13$ (diodes only: TSC),
- $1e14$,
- $3e14$,
- $6e14$,
- $1e15$ neq/cm²

■ Particles:

- 25MeV protons (KIT/Birmingham)
- 24 GeV protons (CERN)
- Reactor neutrons (JSI/Mainz/Brown)
- 300/800MeV protons (FNAL/Los Alamos) → Los Alamos may be out
- Cobalt source

Irradiation according to the project

Irradiation and measurement plan:

■ Initial program:

- 2 sensors and 2 diodes each irradiated with single particle type
- Total: 4 (material) x 4/5 (fluence) x 4 (particle type) x 2 = 128 sensors and 160 diodes (~1/5 of production)
- Each participant doing ALiBaVa measurements (CERN, UFR, KIT) needs to measure ~25 sensors (only one of the two if sensor OK).
- UHH concentrates on diodes and e-TCT (strip sensors)

Wafers reminder

Wafers	Label	Substrate
1-6	FZ	HR FZ 100 mm, <100>, n-type (phosphorus), 2000-2400 $\Omega\cdot\text{cm}$, 300 \pm 15 μm , 1-side polished (Topsil, NitroSil, LOT: 15-2880-50)
7-12	NIT	HR FZ Nitrogenated 100 mm, <100>, n-type (phosphorus), 1500-1900 $\Omega\cdot\text{cm}$, 300 \pm 15 μm , 1-side polished (Topsil, NitroSil, LOT: 3140815, laser marked: 46-56)
13-18	DOFZ	HR FZ Oxygenated Same as FZ, but oxygenated in run 9394 (estimated resistivity around 1000 $\Omega\cdot\text{cm}$, from 4-point measurements on 1 wafer)
19-24	MCZ	HR MCZ 100 mm, <100>, n-type (phosphorus), 800-1000 $\Omega\cdot\text{cm}$, 300 \pm 10 μm , 2-side polished (Okmetic, 3-digit counter mark)

J-M Rafi, CNM

■ Each wafer

- 26 strip sensors
- 20 diodes
- 12 strips

Irradiation procedure

Irradiation and measurement plan:

- People not belonging to the irradiation facility country should access through AIDA 2020
- Hamburg should center on diodes
- Hamburg can access to Cobalt source?
- Strips should be distributed and/or to CERN, KIT or Freiburg
 - Calibrate the centers
- Select the samples for irradiations

- KIT can irradiate some of the spare diodes and strips to the Synchrotron

Samples	Strips	Diodes	Mini strips
Wafer 1	24	15	12
Wafer 7	24	15	12
Wafer 13	24	15	12
Wafer 19	24	15	12