



HPK sensors

- Sensors tested in UCSC:
 - 80 um sensors: 80C
 - 50 um sensors: 50D, 50C
 - 35 um sensors: sample B
- Sensor were tested before irradiation and after neutron irradiation
- We just received a shipment of HPK 35um type b/c/d/e proton irradiated at different fluences
 - Will be tested in the following days

HPK sensors breaking after irradiation

- The sensors show good performance both before and after irradiation
- However they seem to be quite fragile after irradiation
- We had a lot of cases where the sensor broke after several hours of biasing
- It happened that they were tested for ~1 day, but the next time they break down after a few hours

HPK sensors breaking after irradiation

- It is unclear what is the cause
 - It could be the bonding
 - Or that the bias voltage is too high (or the speed of voltage increase)
 - Or the sensor bias time
- It seem to happen close to the bonding and after a while
 - we're trying to use either tall bonds or epoxy coated bonds
 - Slowly increase the V_{bias} and never stay or go close to the breakdown
- A systematic testing of irradiated sensors should be done in the future
 - Always do a visual inspection before and after testing
 - Note the biasing history of the sensor breakdown (how often tested, what voltages etc)
 - Keep biased and cycle bias long-term