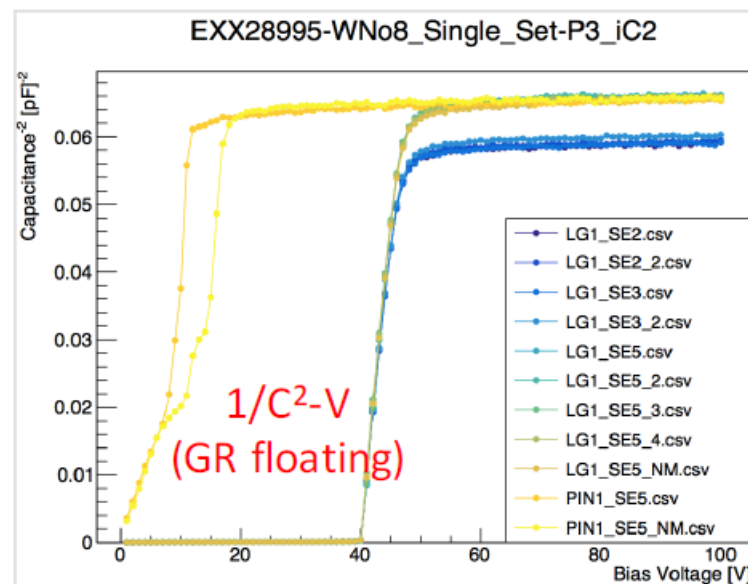
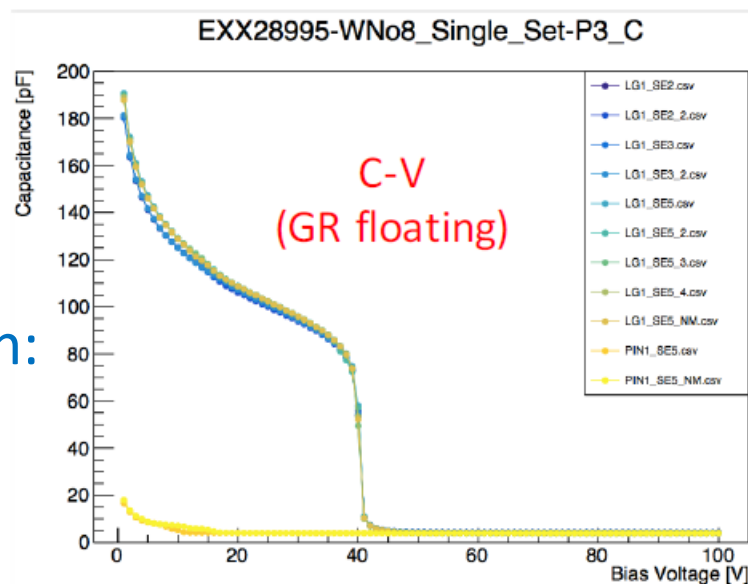


# The I-V and C-V measurements of irradiation sensors

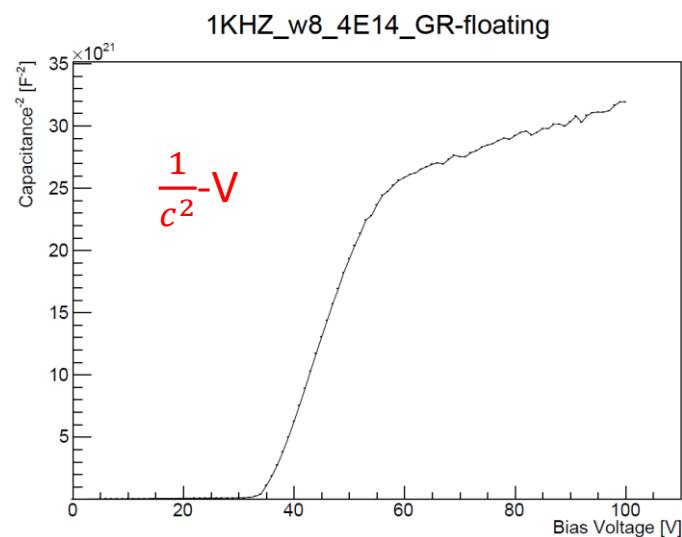
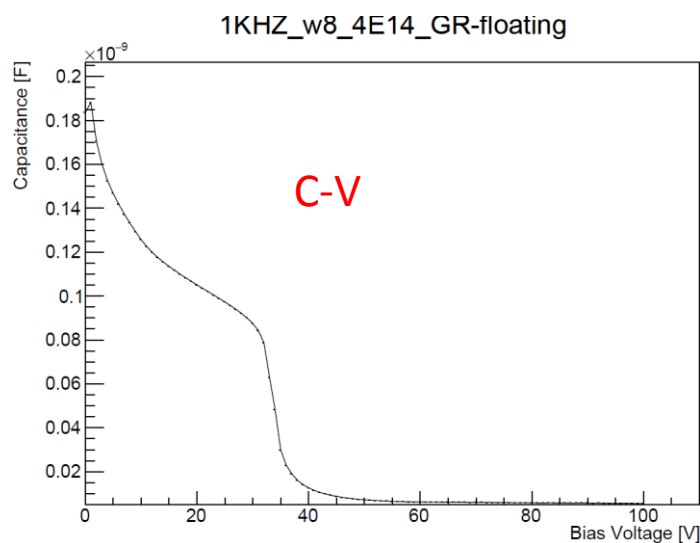
Yuhang, Liaoshan, Ryuta  
2019/4/4

# Basic information of W8 single pad sensors before and after 4E14 irradiation:

Before  
irradiation:



After  
irradiation:



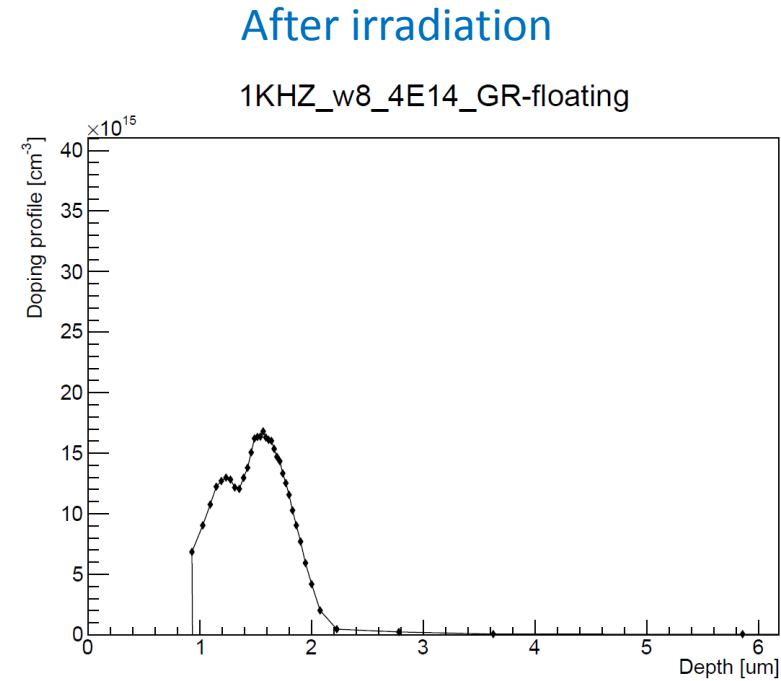
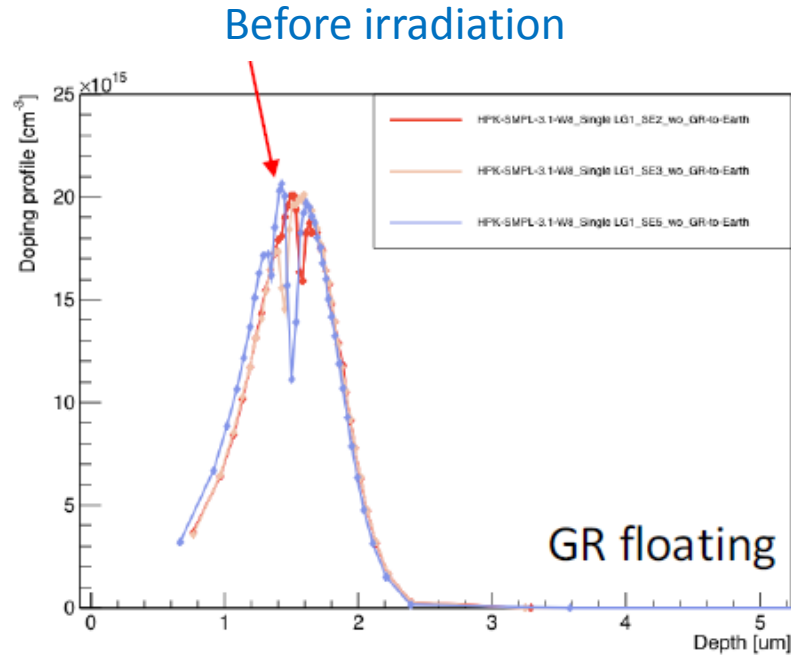
Type:3.1

Thickness:50um

Full depletion voltage:  
40V->?

Measure at room tem  
perature:20-22°C.

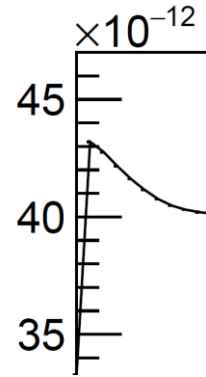
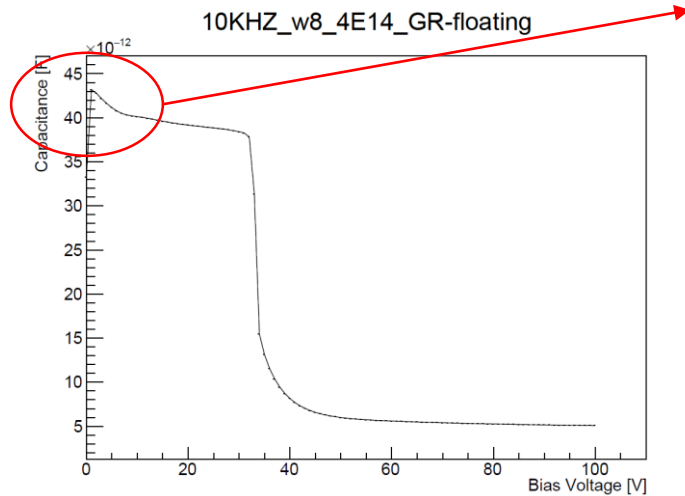
## Doping profile:



Doping profile  $20 \times 10^{15} \text{ cm}^{-3} \rightarrow 17 \times 10^{15} \text{ cm}^{-3}$ . The value of doping profile is reduced.

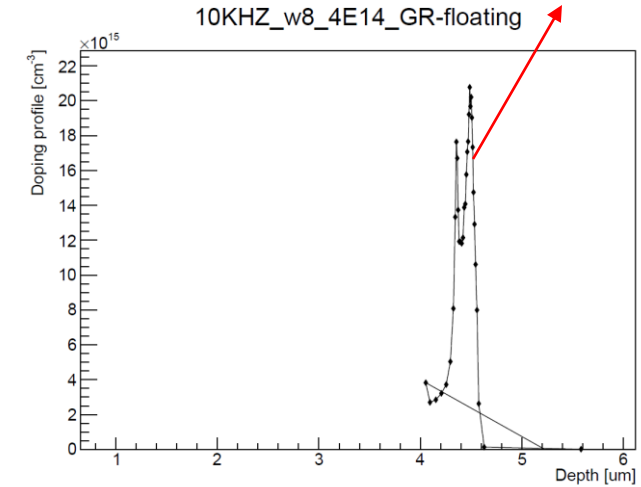
# Different frequencies:

10KHZ

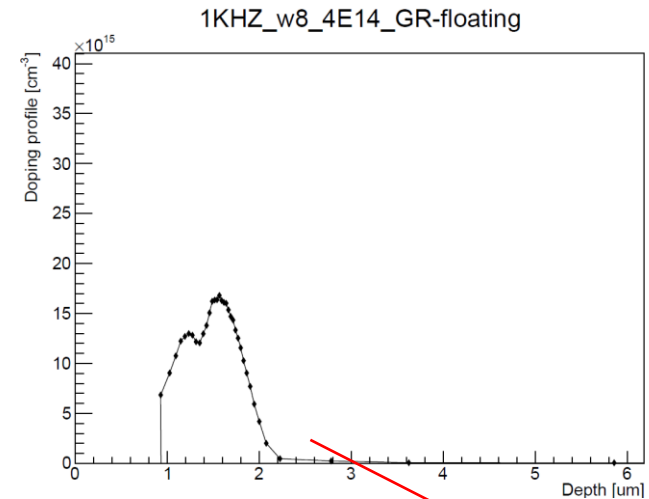
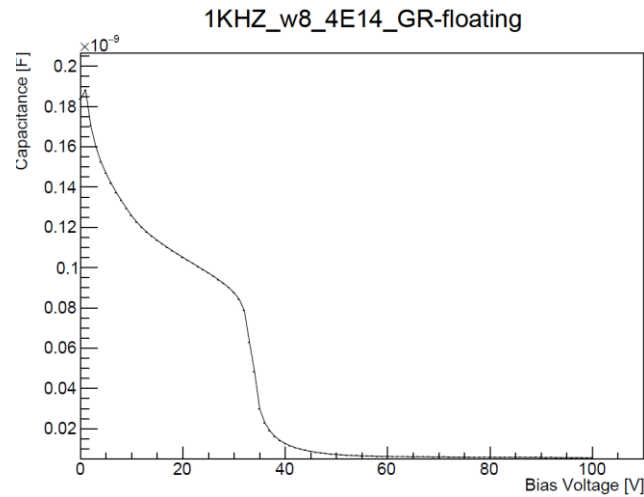


First rise and then fall

Position of the multiplication layer: 4 $\mu$ m-5 $\mu$ m



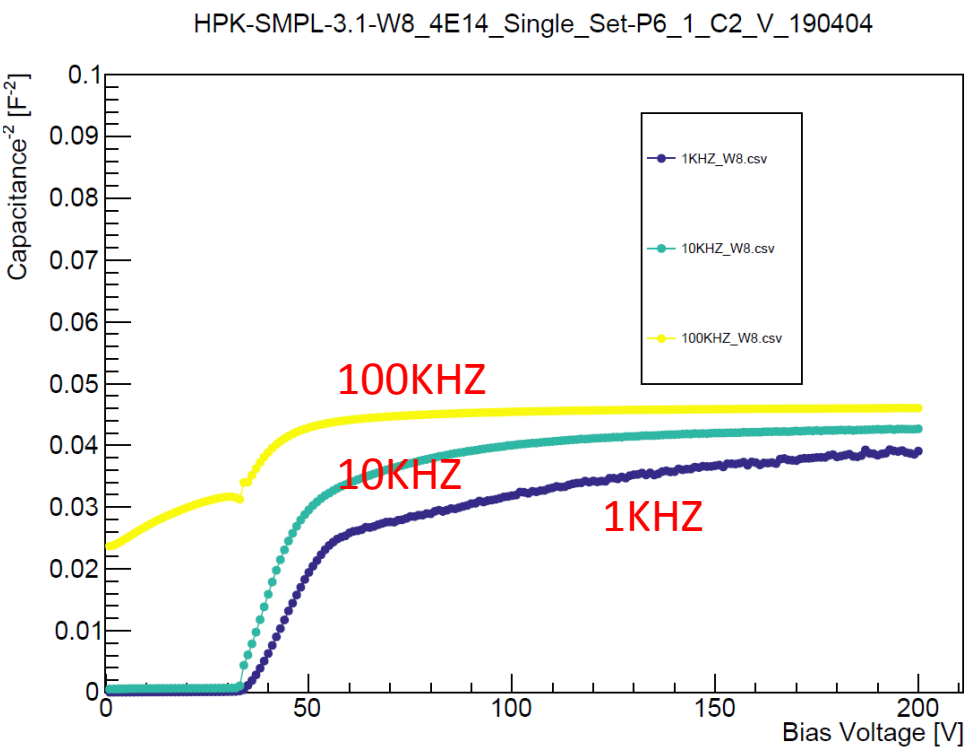
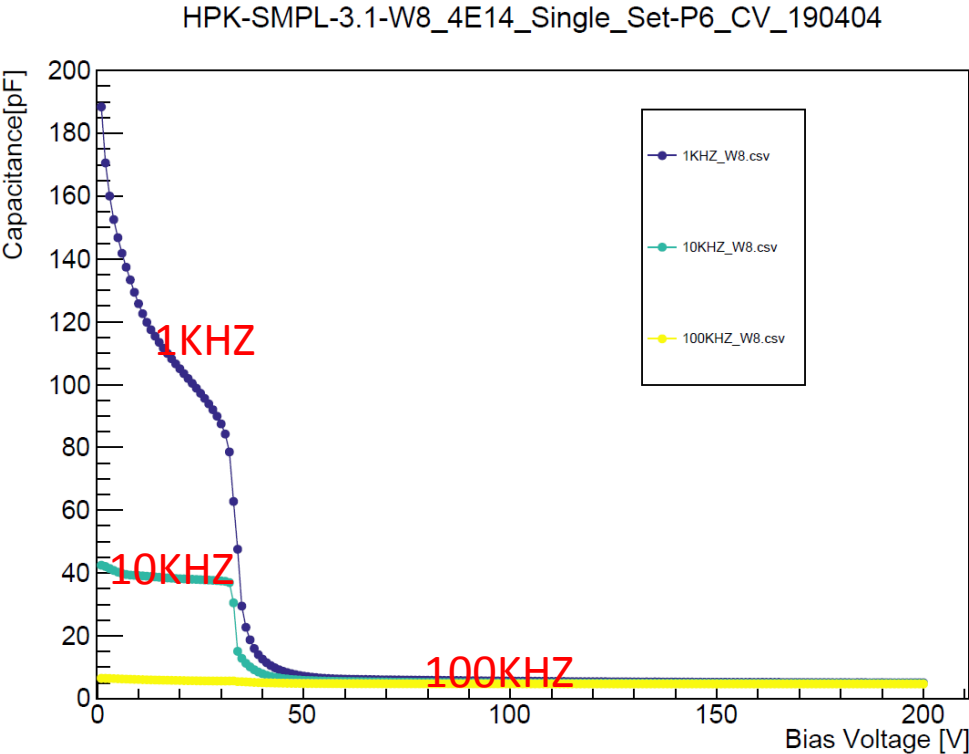
1KHZ



Why are there such big differences?

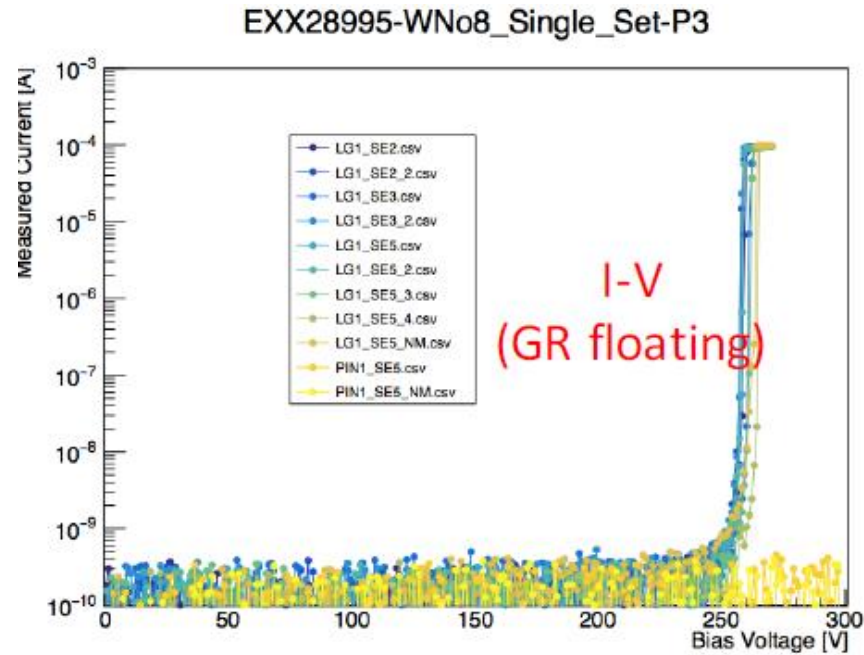
Position of the multiplication layer: 1 $\mu$ m-2 $\mu$ m

Distribution of C-V and  $\frac{1}{C^2} - V$  at different frequencies:

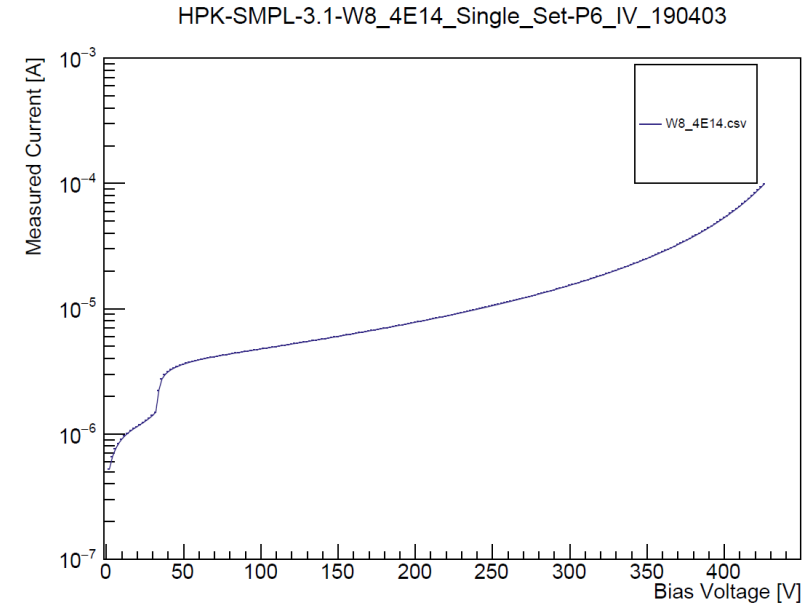


I-V:

Before irradiation



After irradiation



The breakdown voltage before irradiation: 250V

The breakdown voltage after irradiation: 400V-420V? Not sure now.

# Next Plan

- Measure W8 at low temperatures.
- Measure W8 at different frequencies.
- Measure the depletion voltage and breakdown voltage of W8.