

Biased Electrode XP #806

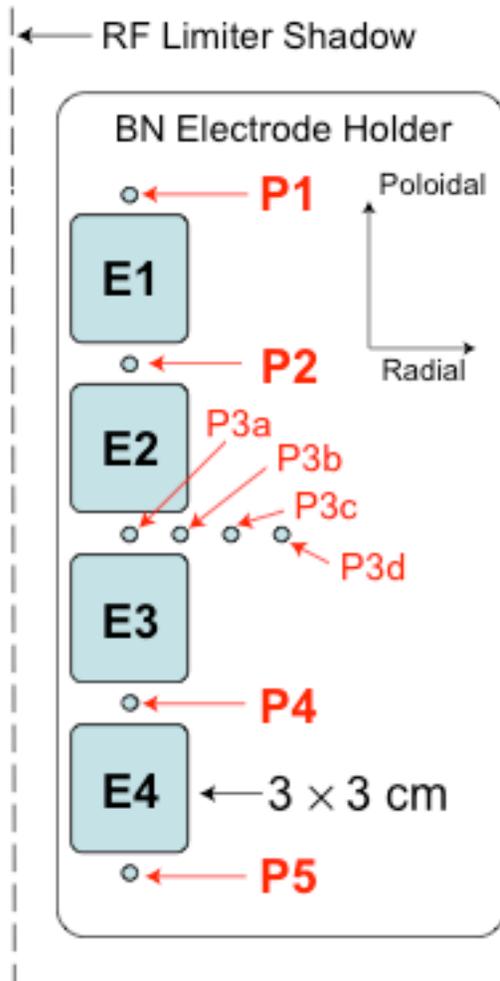
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NSTX meeting 6/9/08

Last part of XP done 5/22/08 and 5/27/08 (Ohmic plasmas)

=> test 'floating double probe' electrode configuration

Electrode Configurations



Normal - E2 and E3 both biased with respect to the local vessel ground

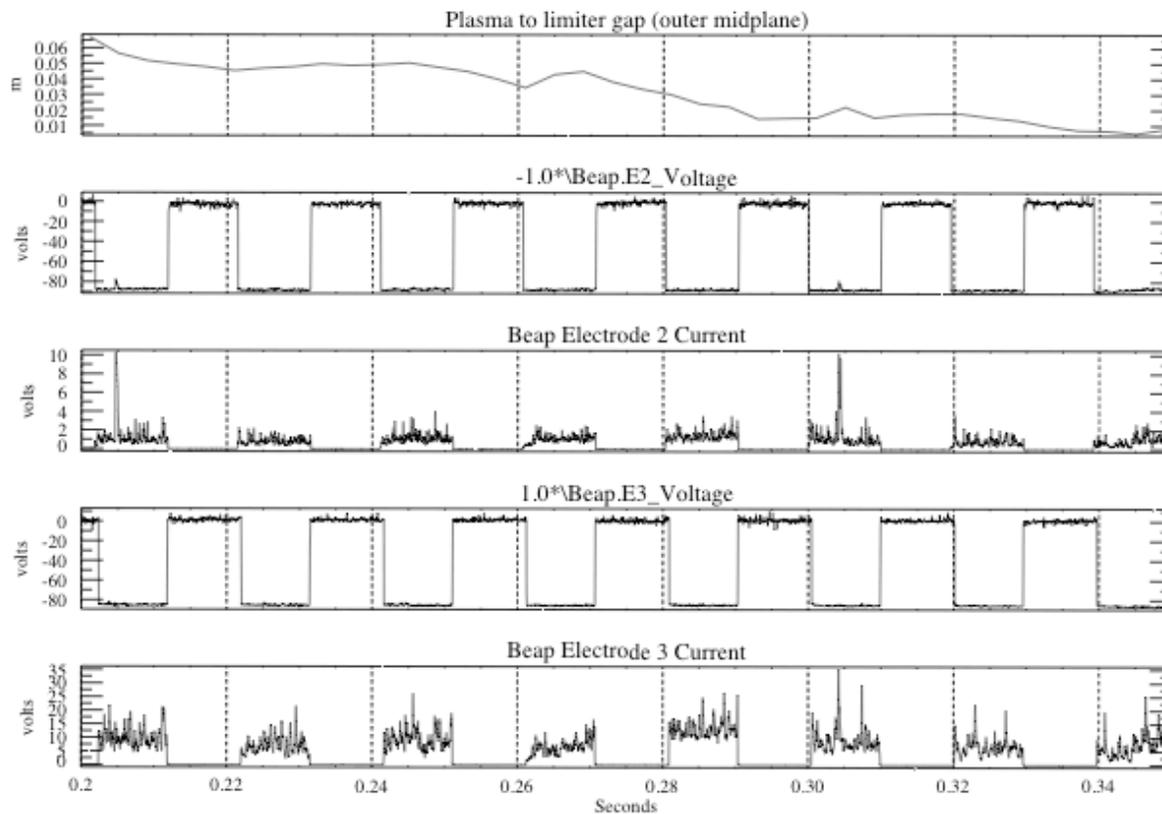
Floating - E2 biased with respect to E3, no vessel ground

⇒ Floating mode should draw much less current and maybe has same effect on plasma potential

Time Dependences

Ohmic, $B=4.5$ kG, $I=0.8$ MA, outer gap ~ 5 cm to 1 cm

Shots:
129501



outer gap

VE2

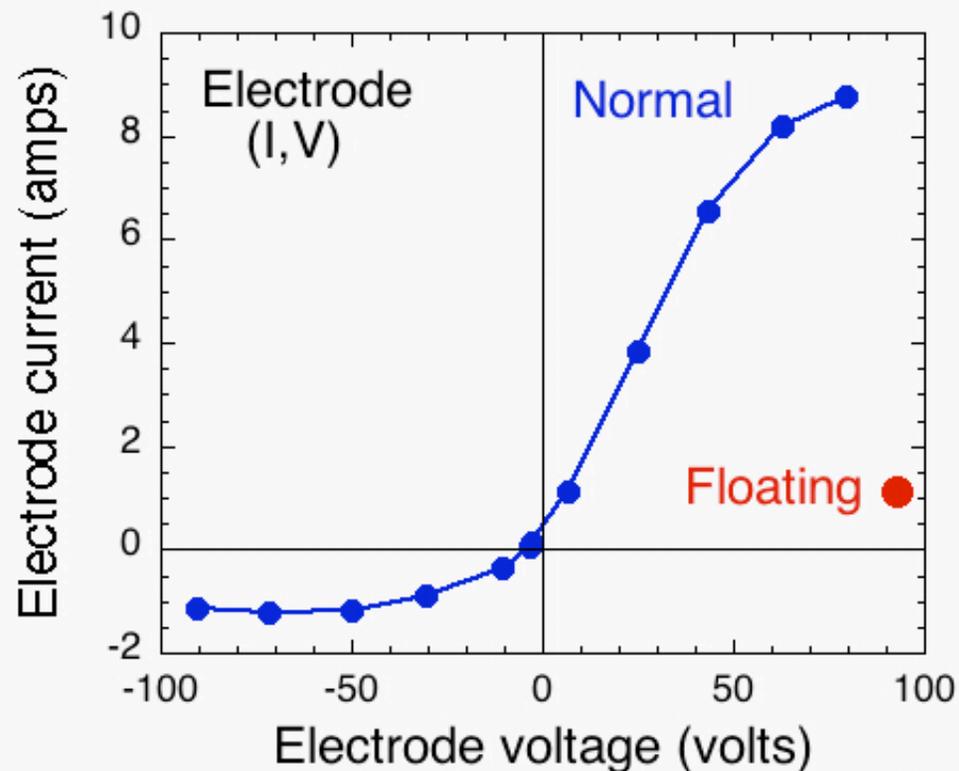
IE2

VE3

IE3

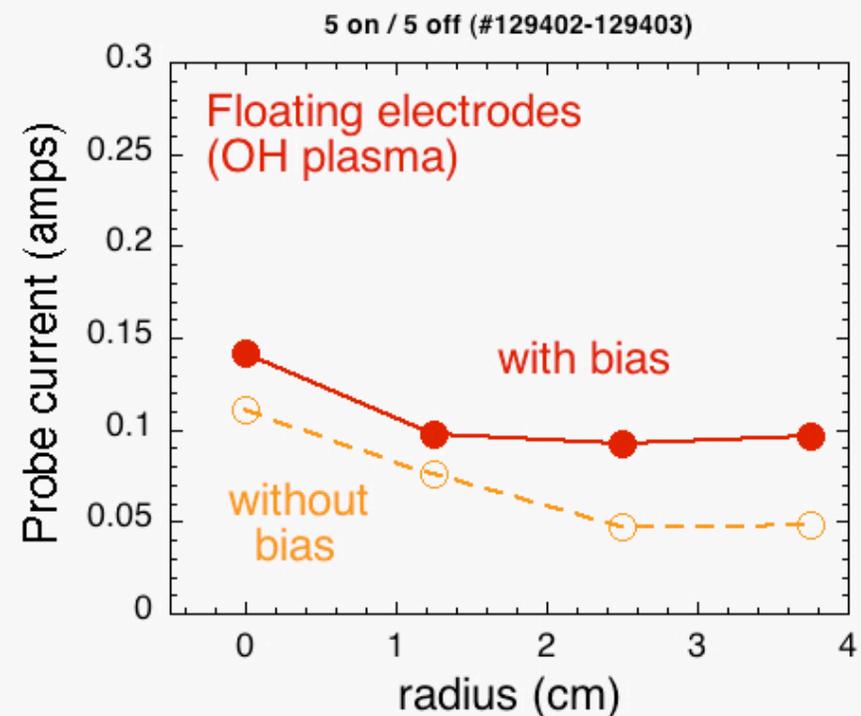
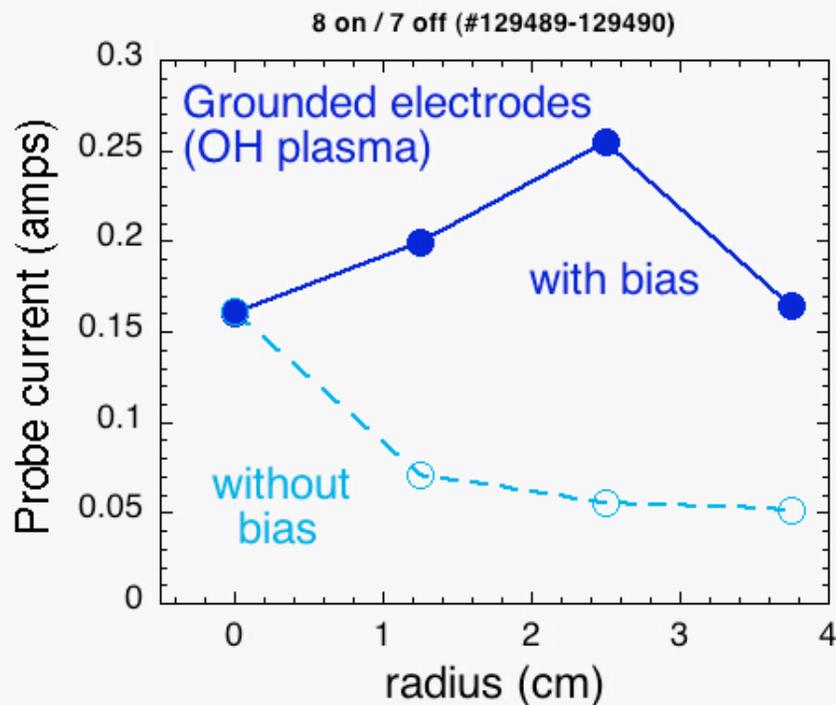
Electrode (I,V) Characteristic

- Normal electrodes ~ same as seen before
- Floating electrodes ~ I_{sat} , as expected

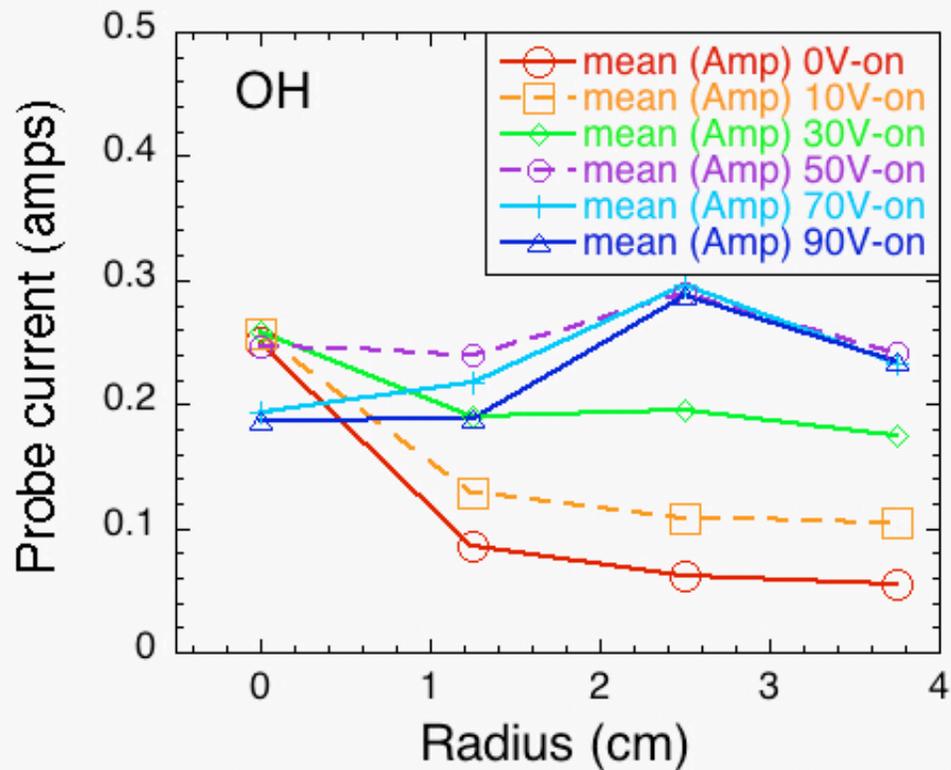


SOL Density Effect in Probe Array

- Normal case density increases up to x5 @ ± 90 volts
- Floating case density increases up to x2 @ ± 45 volts



Voltage Scan - Normal Electrodes



- Most effect @ ~ 50 V
- 'Overdrive' ≥ 50 V ?

Tentative Conclusions

- Floating electrodes have less effect on SOL, but use much less current (and power)
- => Keep floating electrodes option for divertor tile bias

