

01-03-2023

X-ray diagnostic
- initially seed plasma.

* 1ms pulses in Helicon plasma

→ Connected All three SDD's with $ST = 1^\circ$.

Magna Power = 200A, B.B = 200A.

Nozzle = 103A, Pressure = 0.277 mTorr.

- 01 - CC Radial Scan - 277 μ torr
- 02 - CC Nozzle - 277 μ torr
- 03 - CC Midpoint Ap4 - 277 μ torr

04 - CC Midpoint - Ap0 - ST - 1°
Ch - 17

RMF is turned ON. - 6ms pulse width.

- 05 - CC Radial Scan - ST - 1° - RMF - 1
- 06 - CC Nozzle - ST - 1°
- 07 - CC Midpoint - ST - 1° CR =
Ch - 19

X-ray taken
at all 6ms
pulse width.

08 - CC Radial. Argon was added for B.D. - Nozzle = 101A.
[~ 60% H₂, 40% Ar.] BB = 190A
09 - CC Nozzle - RMF - 2 MagP = 190A
10 - CC Midpoint Ap0 15,000 Counts

Sam was turning
the CR increased to
18,000.

11 - We did ~~take~~ took data again

12 -

13 - CC Midpoint RMF - 2a - 503 μ torr = CR = 1759/.

The RMF was shut off as we were not able to see the aperture of Midpoint from North side.

— Aperture changed of Midpoint to AP 1

- 14 - CC ~~Midpoint~~ Radial Scan.

- 15 - CC NOZZLE - 501 μ torr.

- 16 - CC Midpoint Ap1. — CR ~~$\approx 29,000$~~
Ch - 30. 40,149

Aperture - 2.

17

18

19 - CC Midpoint - Ap2 CR ≈ 649317 C/s.

* The Low Energy spectrum got broader with Ap2.

— There was slight confusion in aperture.

Now set of Ap4.

20 - CC Radial Scan

21 - CC NOZZLE

22 - CC Midpoint AP4 - CR $\approx 48,000$ C/s.

AP 3

23 - CC Radial Scan

24 - CC NOZZLE

25 - CC Midpoint AP3 — CR ≈ 40749 C/s.
Ch ≈ 38

AP2 (NOT SURE).

26

27

28 CCMi

There is ^{Small} Carbon Peak b/w ch 31 & 38
if that [^] is included ch 38 - Low E Spectra
if ~~C~~ C is excluded ch - 31
(≈ 257 eV)

CR 63,825?

AP1.

01/03/23. (2)

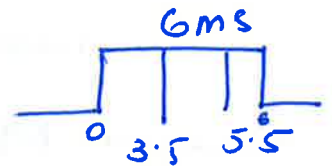
29

30

31 - CC Midpoint AP1. CR = 25867.7 /s.

— AP4 and Power is increased.

The Helicon was



The pulse width = 2ms. and Delay 3.5ms.

The Radial Scan and CC Midpoint shows only the ~~the~~ Low energy spectrum. This concluded that the ~~tail is~~ other part of the X-ray spectrum is due to helicon.

This means we have good confinement.

- 32 - CC Radial Scan

- 33 - CC Nozzle

- 34 - CC Midpoint - AP4 PW 3.5 to 5.5 - CR = 61980.8 /s

RMF power increased.

LE peak.

35

36

37 - CC Midpoint - AP4 - PW - 3.5 to 5.5 - RMF - 3.

— We changed the Magnetic field

B.B = Magna Power = 150 A, Nozzle = 101 A.

38

39

40 - CC Midpoint shows that the Low energy peak shifts to left. It is ~~not~~ seen

(3)

— The Magnetic field changed to 205A

41

42

43 - CC Midpoint Ap4 - 508 μ torr - The channel no # 53.
there seems a L'E peak.

— MP = 230A.

44 - CC Radial Scan

45 - CC NOZZLE

46 - CC Midpoint Ap4 - 522 μ torr

The L'E peak has broadened to channel # 69.
and the peak is also seen.

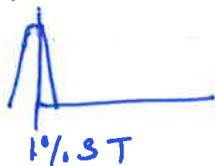
— MP = 170A

47

48

49 - CC Midpoint Ap4 - 519 μ torr.

The L'E peak has reduced. The peak is not to be seen.



— The Argon % is reduced and H₂ increased

While doing so, the X-ray spectrum showed

— slight bump/broadening.

As the B.D was intermittent. We added more of Argon.

- More Argon added - 624 μ tor

(4)

~~50~~ 49

~~51~~ 50

~~52~~ 51 - CC Midpoint Ap 4 - The x-ray spectra looked the same.

~~52~~ Added more of H_2 and kept the Argon.
But the B.O was intermittent.

52 - CC Midpoint Ap 4.

_____ Took noise spectrum.