

First phase-contrast imaging measurements up to 5 MHz



N. P. Basse, S. J. Wukitch, E. M. Edlund, L. Lin, M. Porkolab

All-around cPCI wiz : J. A. Stillerman

MIT Plasma Science and Fusion Center

Outline:

- **Old and new PCI setup**
- **1040122 analysis**
- **1040123 analysis**

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Old and new PCI setup



	Old setup	New setup
# channels	12	32
chord spacing ΔR	4 mm	4 mm
R coverage	5 cm	15 cm
k_{\min}	$2\pi/11\Delta R = 1.4 \text{ cm}^{-1}$	$2\pi/31\Delta R = 0.5 \text{ cm}^{-1}$
k_{\max}	$2\pi/\Delta R = 16 \text{ cm}^{-1}$	$2\pi/\Delta R = 16 \text{ cm}^{-1}$
$k_R [-k_{\max}/2, k_{\max}/2]$	$[-8, 8] \text{ cm}^{-1}$	$[-8, 8] \text{ cm}^{-1}$
sampling frequency	1 MHz, 12 bit	10 MHz, 16 bit
time window	0.5 s	up to 2 s
detector bias current	max 10 mA	max 35 mA
preamps	3 dB points at 5 kHz and 3 MHz	3 dB points at 5 kHz and 15 MHz

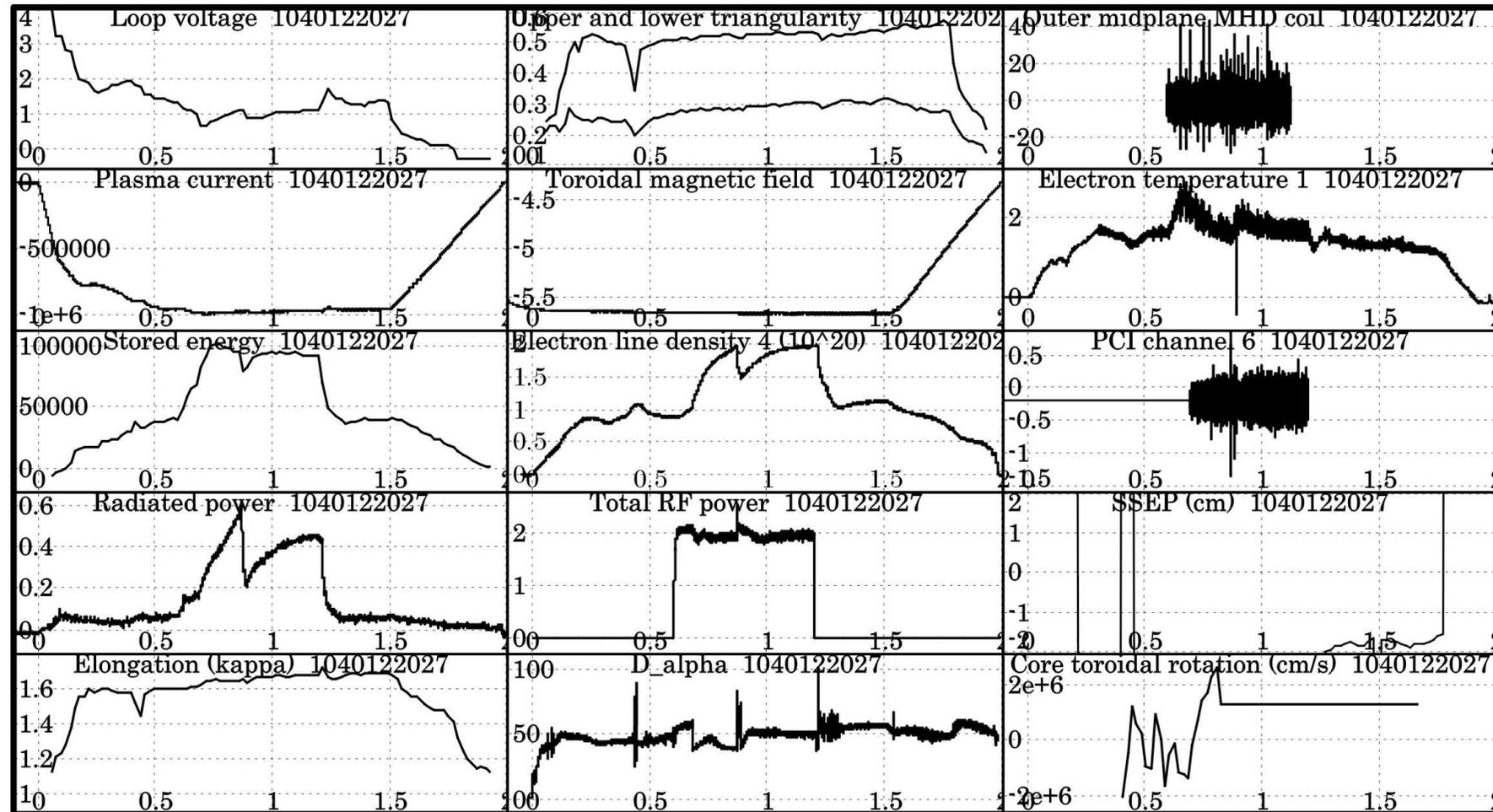
Transitional PCI setup



Runs Thursday (1040122) and Friday (1040123) last week:

- 12 original core channels digitized using the old data acquisition system.
- Remaining 20 channels (10 on each side of the core channels) sampled using 10 MHz cPCI system. 0.5 s time windows, so 200 MB per shot.
- Total amount of data collected per shot before the fast cPCI installation: 650 MB.
- If we use all 32 cPCI channels at 10 MHz for 1.5 s time windows we will acquire 1 GB per shot.

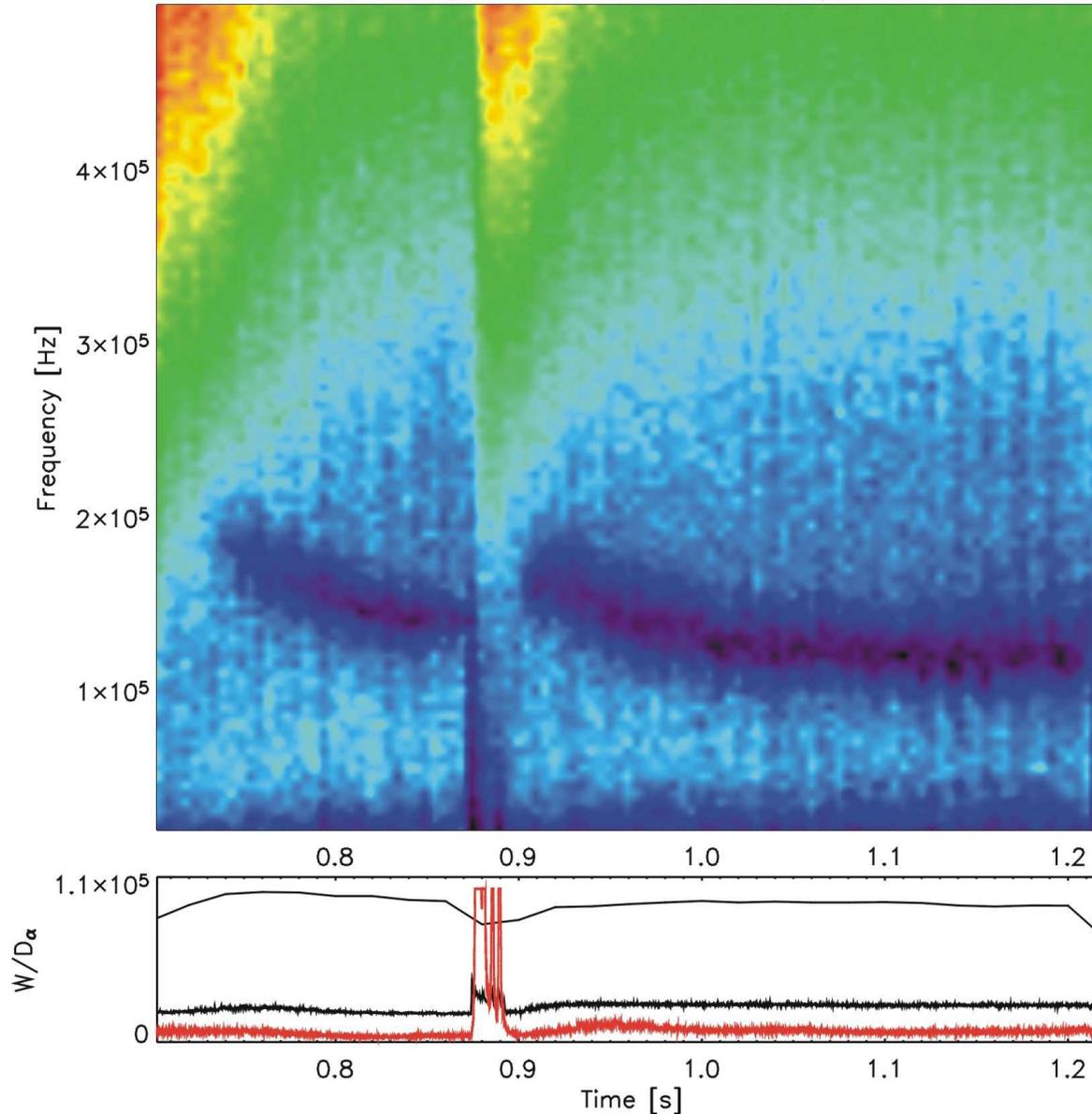
Run 1040122(027)



MP #372 Further studies of the quasi-coherent mode in EDA H-mode plasmas
MP #369 Experimental measurement of neutral penetration in H-Mode plasmas

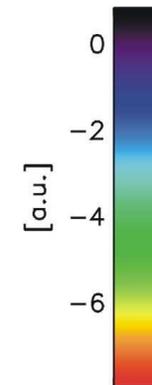
20 kHz to 500 kHz (old range)

Binned spectrogram – limited frequency/time interval



Shot: 1040122027
Time res.: 5.04E-03 [s]
Freq. res.: 5.00 [kHz]
Prange: [-7.9E+00, 8.0E-01]
Power scale: Logarithmic

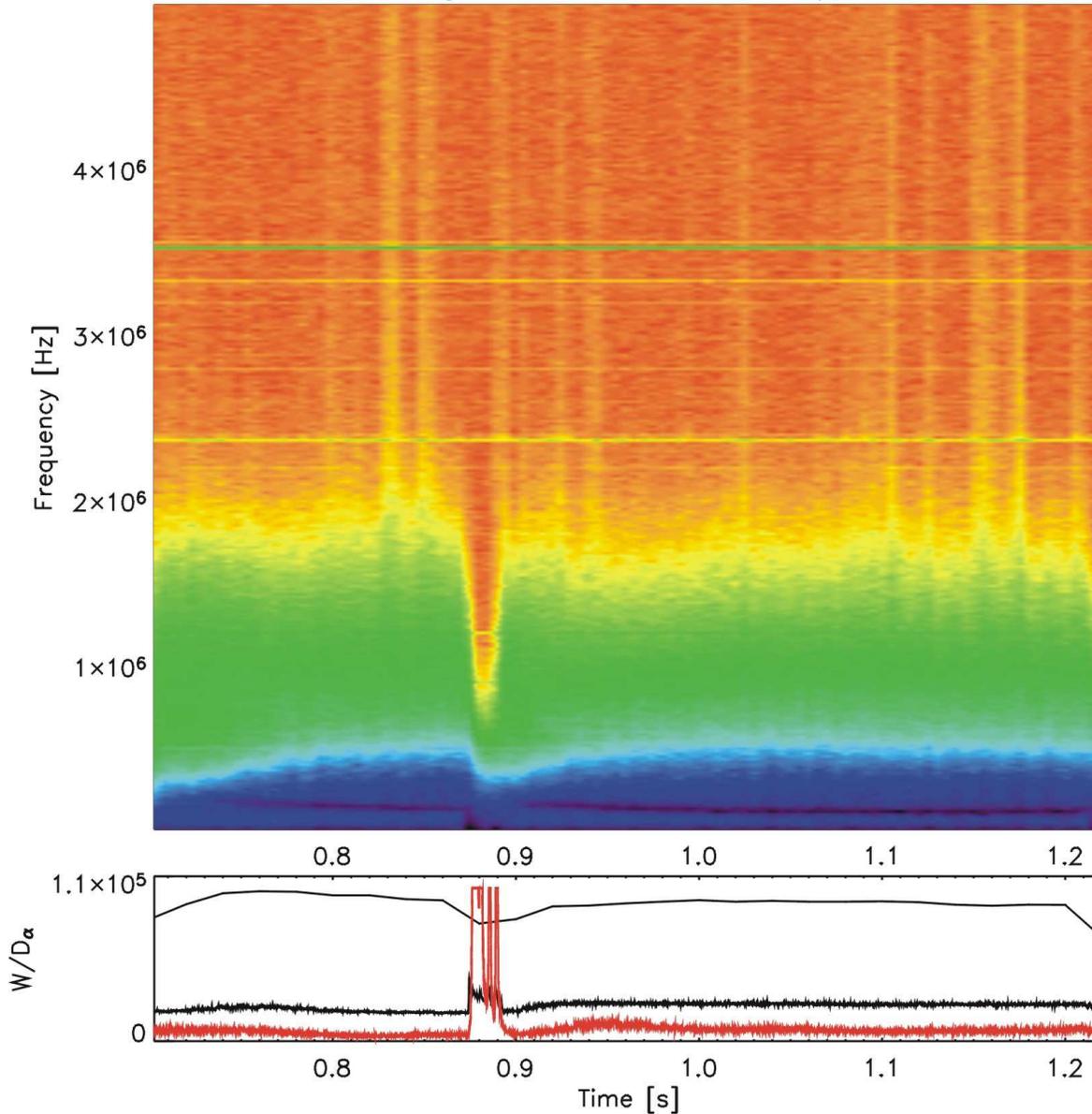
Channel: 17



20 kHz to 5 MHz (new range)

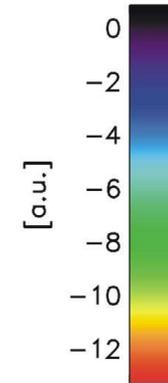


Binned spectrogram – limited frequency/time interval

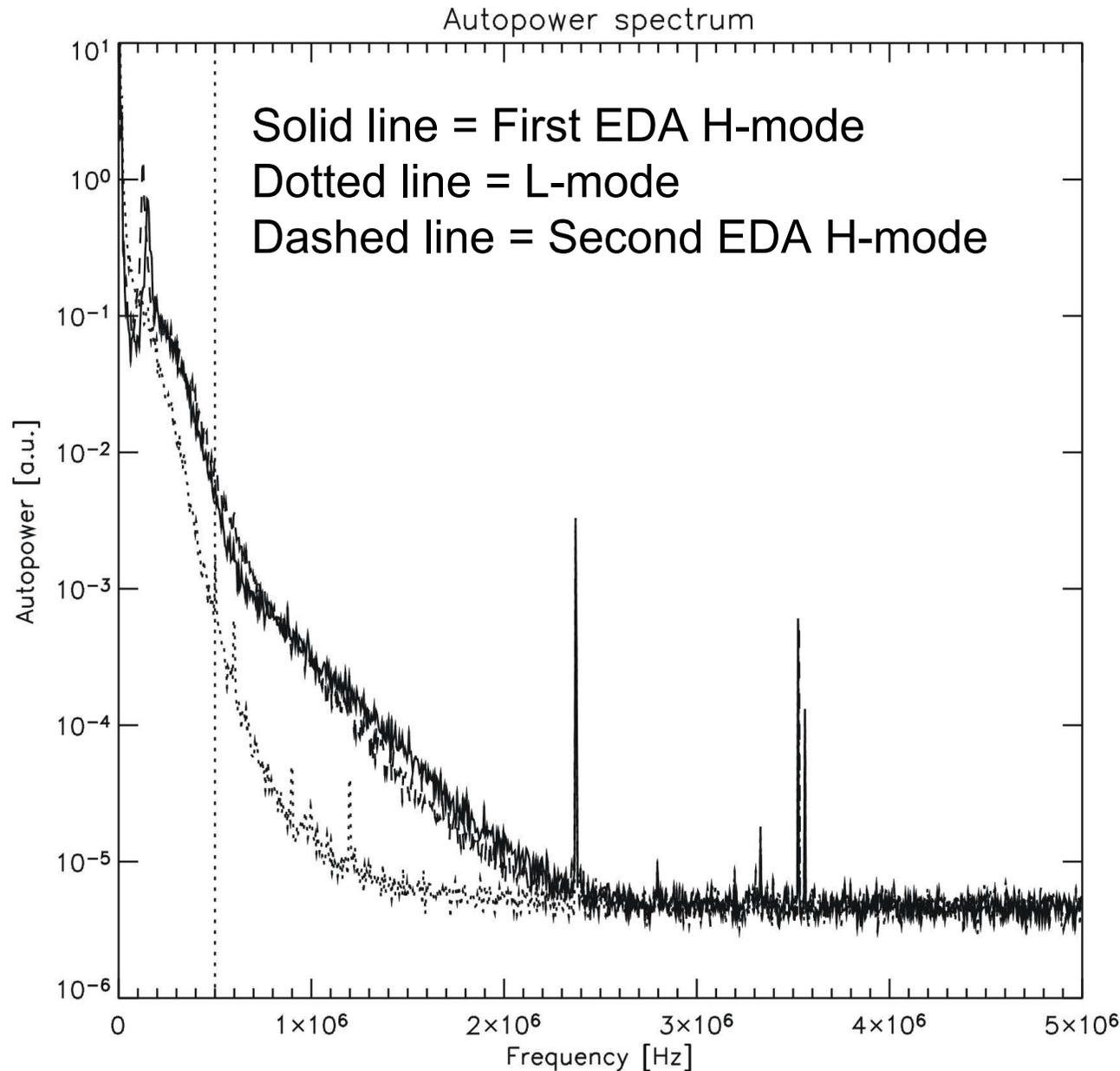
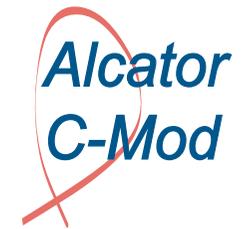


Shot: 1040122027
Time res.: 5.04E-03 [s]
Freq. res.: 5.00 [kHz]
Prange: [-1.3E+01, 8.0E-01]
Power scale: Logarithmic

Channel: 17



20 kHz to 5 MHz (new range)



Shot_one: 1040122027
Freq. res.: 5.00 [kHz]
Trange_one:
[8.0000E-01,8.1000E-01] s
Power scale: Logarithmic

Channel_one: 17 (solid)

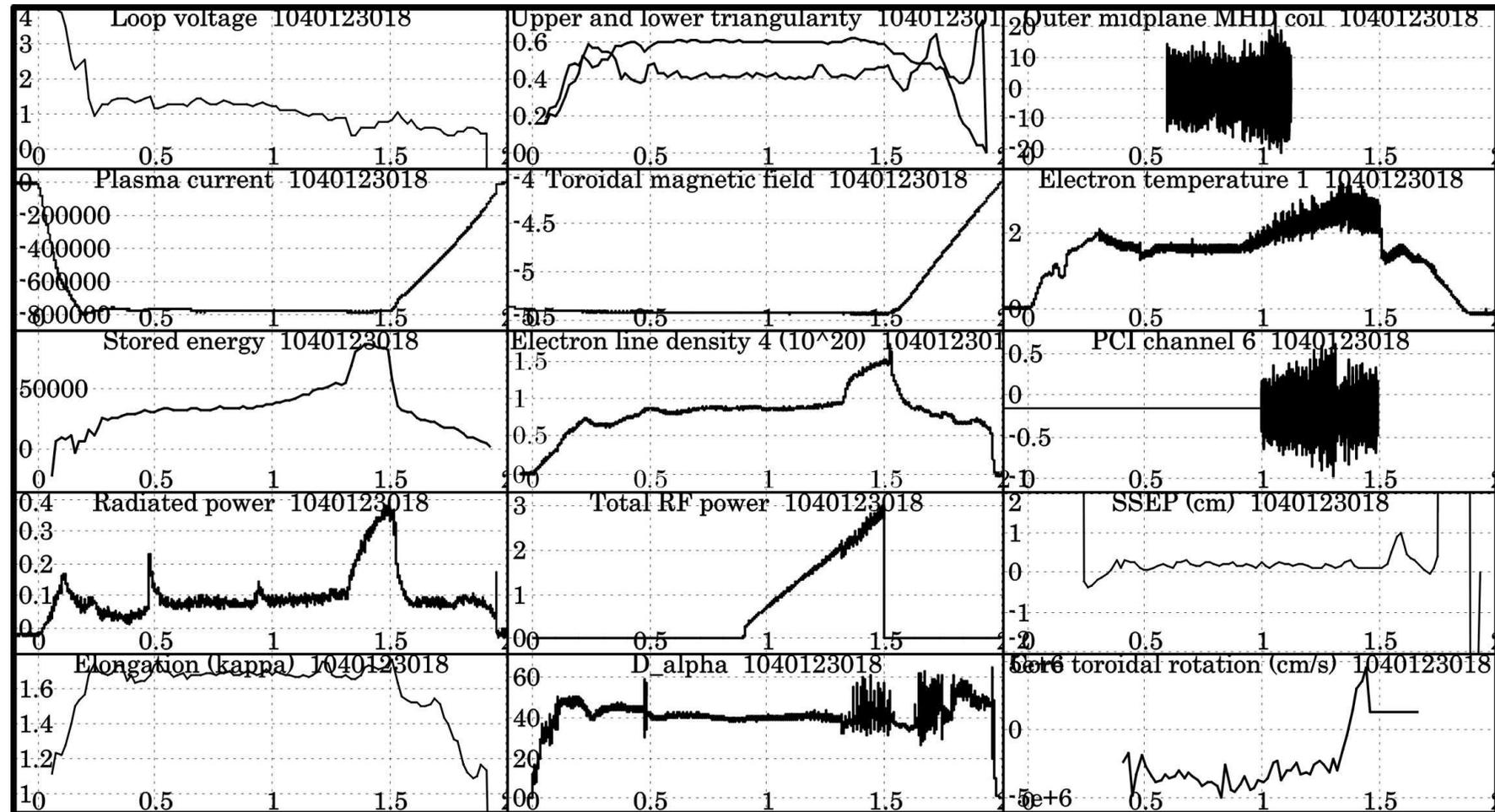
Shot_two: 1040122027
Freq. res.: 5.00 [kHz]
Trange_two:
[8.8000E-01,8.9000E-01] s
Power scale: Logarithmic

Channel_two: 17 (dotted)

Shot_three: 1040122027
Freq. res.: 5.00 [kHz]
Trange_three:
[1.0000E+00,1.0100E+00] s
Power scale: Logarithmic

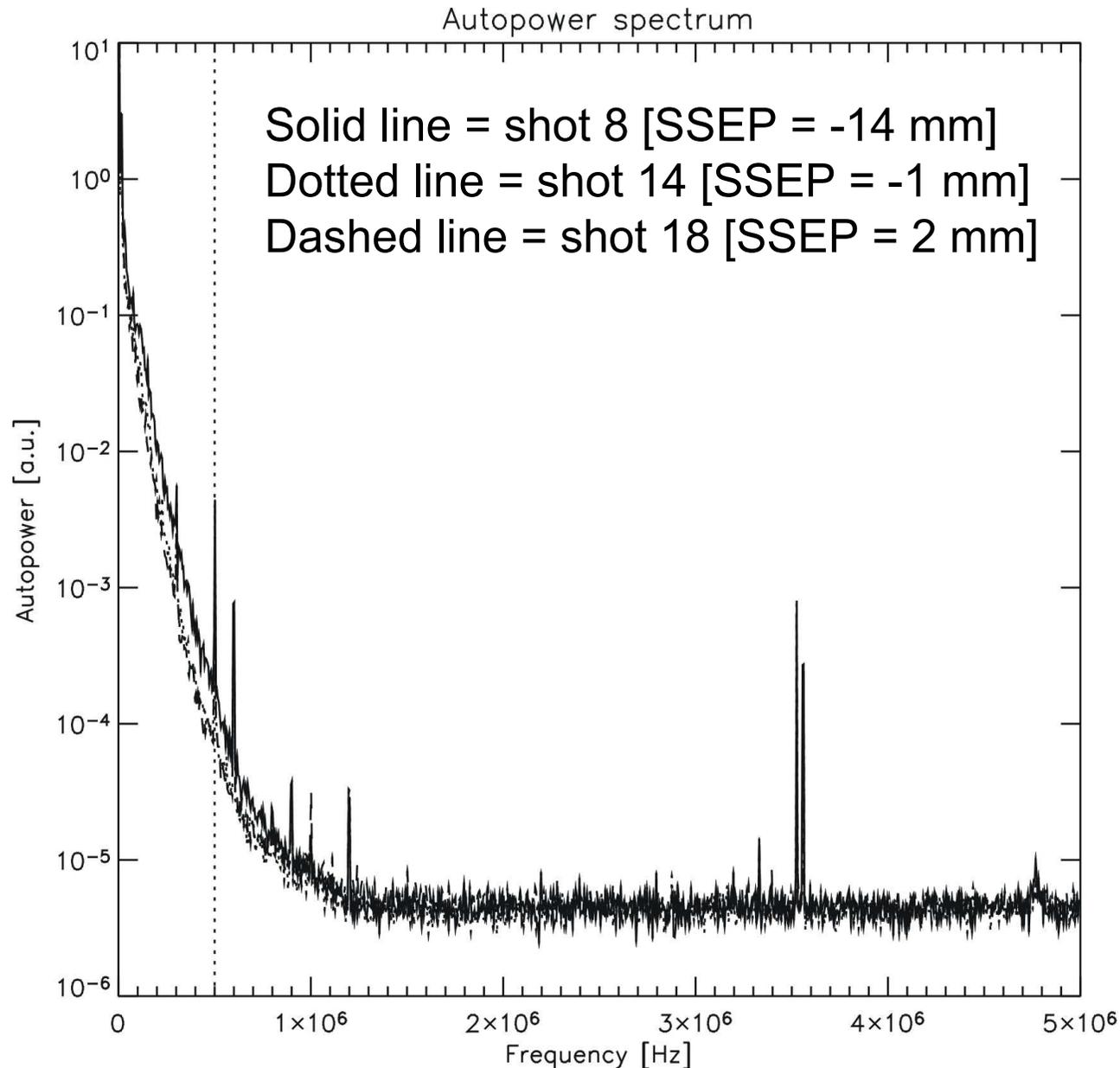
Channel_three: 17 (dashed)

Run 1040123(8,14,18)



MP #375 Rotation and H-mode threshold versus SSEP

L-mode 1040123(8,14,18)



Shot_one: 1040123008
Freq. res.: 5.00 [kHz]
Trange_one:
[1.1000E+00,1.1100E+00] s
Power scale: Logarithmic

Channel_one: 17 (solid)

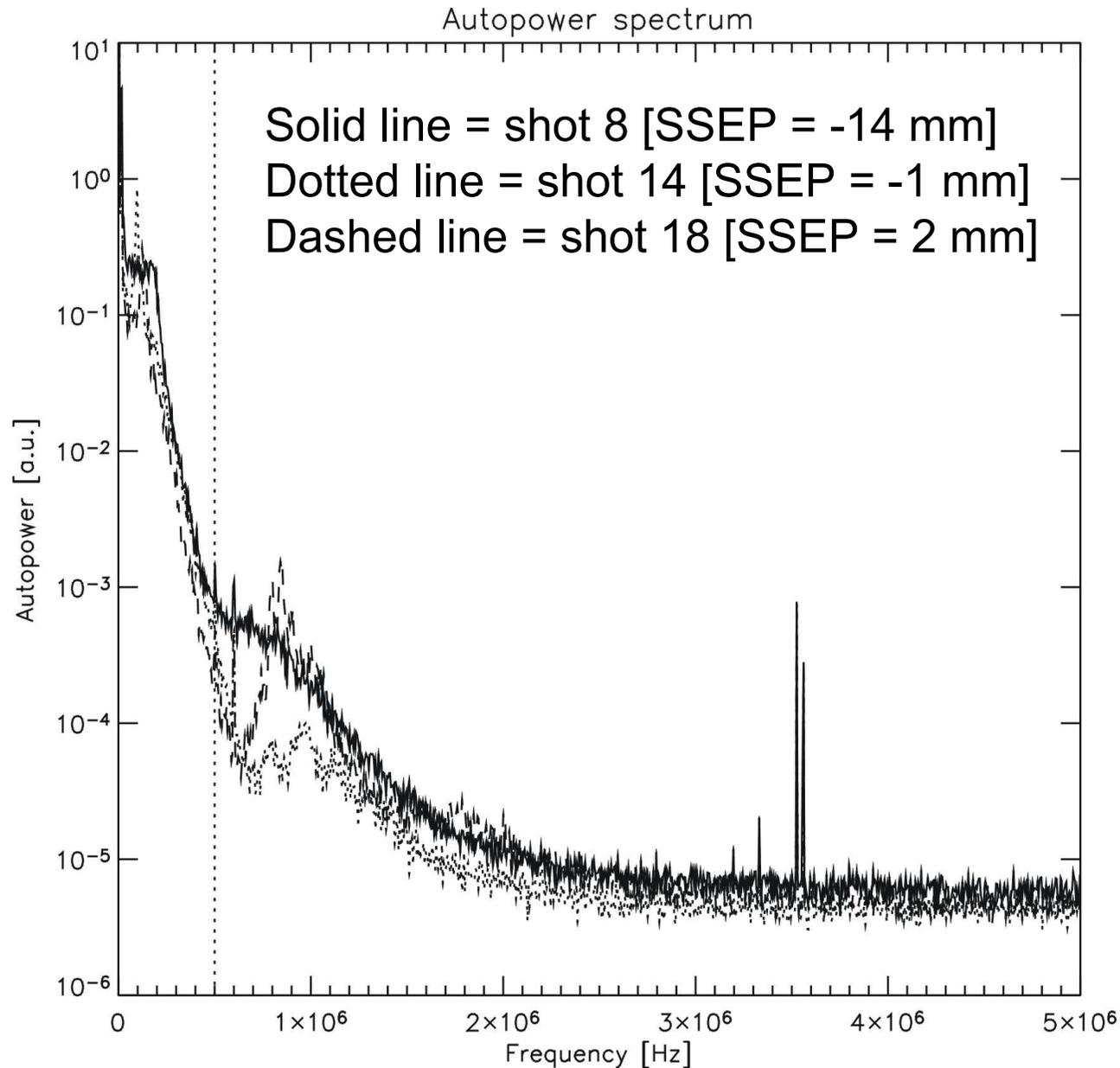
Shot_two: 1040123014
Freq. res.: 5.00 [kHz]
Trange_two:
[1.1000E+00,1.1100E+00] s
Power scale: Logarithmic

Channel_two: 17 (dotted)

Shot_three: 1040123018
Freq. res.: 5.00 [kHz]
Trange_three:
[1.1000E+00,1.1100E+00] s
Power scale: Logarithmic

Channel_three: 17 (dashed)

H-mode 1040123(8,14,18)



Shot_one: 1040123008
Freq. res.: 5.00 [kHz]
Trange_one:
[1.2600E+00,1.2700E+00] s
Power scale: Logarithmic

Channel_one: 17 (solid)

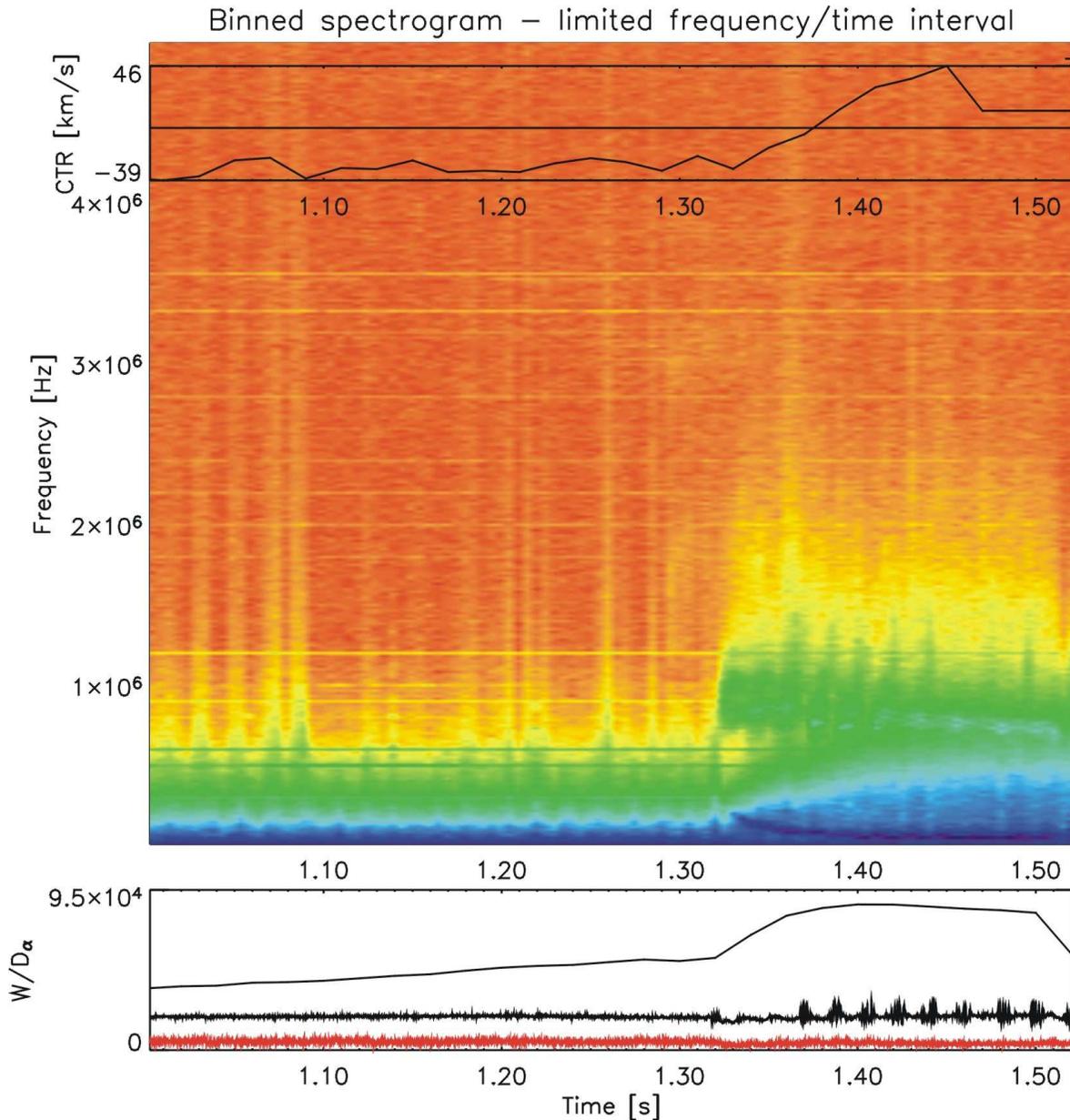
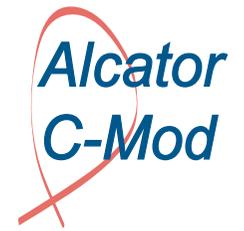
Shot_two: 1040123014
Freq. res.: 5.00 [kHz]
Trange_two:
[1.2300E+00,1.2400E+00] s
Power scale: Logarithmic

Channel_two: 17 (dotted)

Shot_three: 1040123018
Freq. res.: 5.00 [kHz]
Trange_three:
[1.3400E+00,1.3500E+00] s
Power scale: Logarithmic

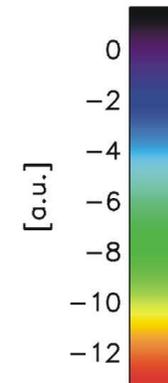
Channel_three: 17 (dashed)

1040123018 (SSEP = 2 mm) [20 kHz to 5 MHz]

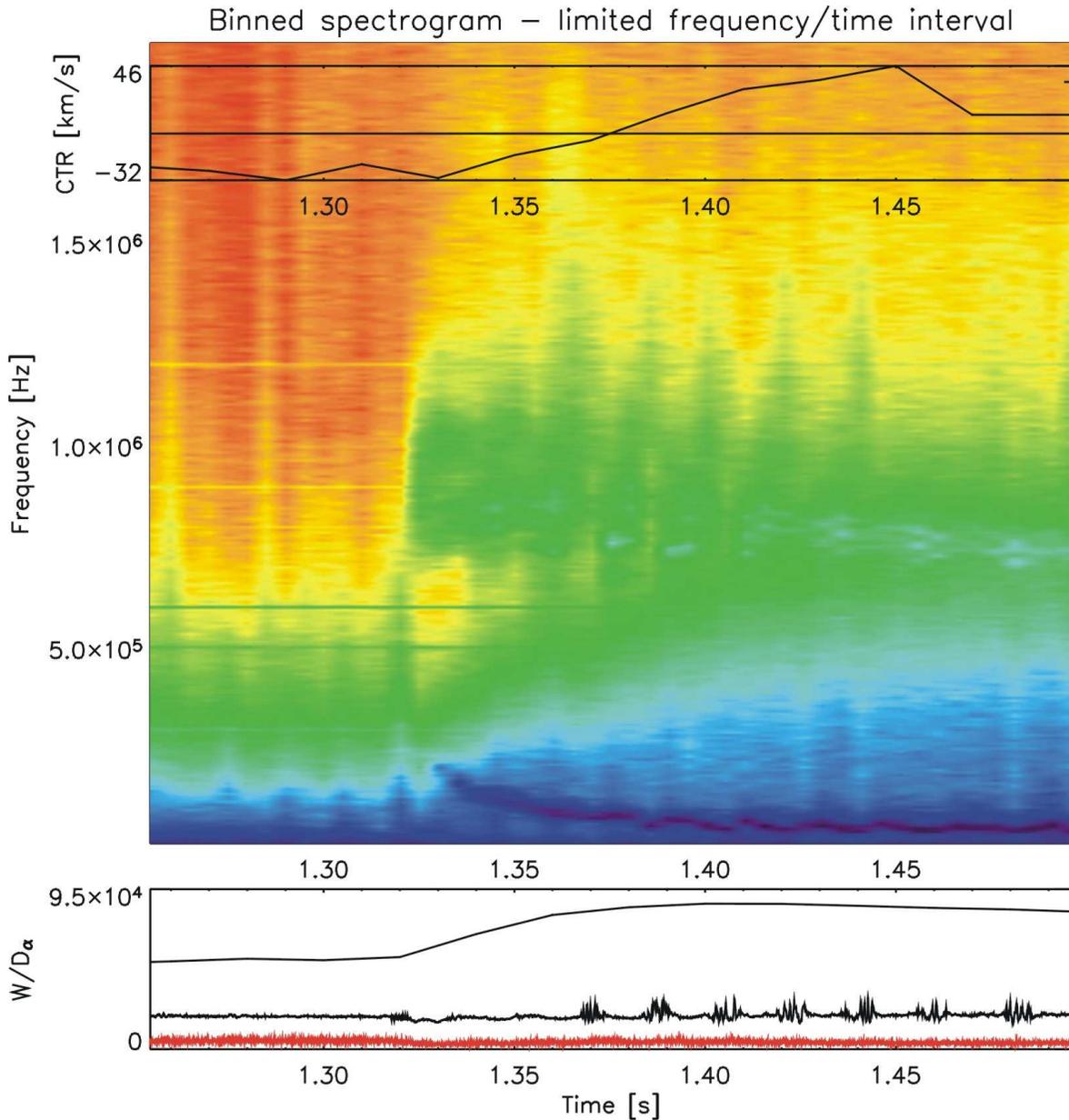


Shot: 1040123018
Time res.: 5.04E-03 [s]
Freq. res.: 5.00 [kHz]
Prange: [-1.3E+01, 1.6E+00]
Power scale: Logarithmic

Channel: 17



1040123018 (SSEP = 2 mm) [20 kHz to 2 MHz]



Shot: 1040123018
Time res.: 5.04E-03 [s]
Freq. res.: 5.00 [kHz]
Prange: [-1.3E+01, 1.6E+00]
Power scale: Logarithmic

Channel: 17

