

Interplay between confinement, turbulence and magnetic topology

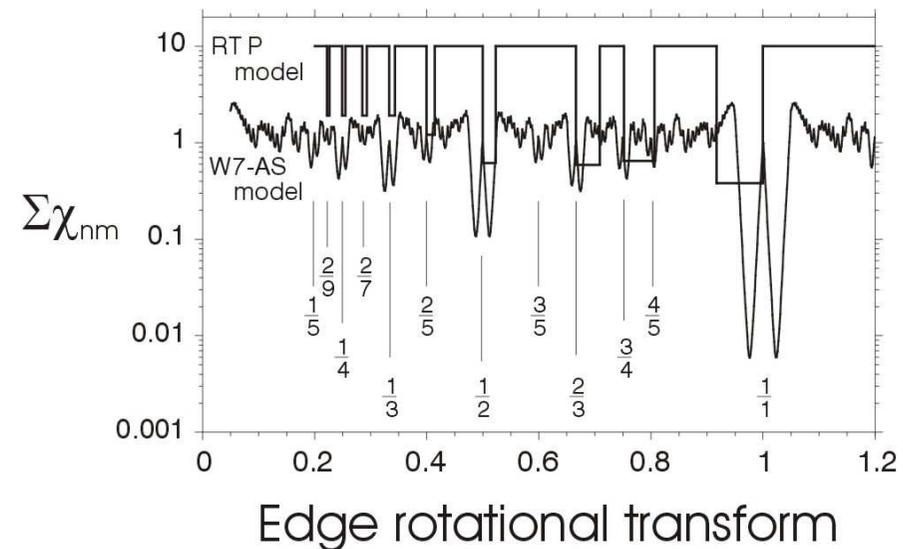
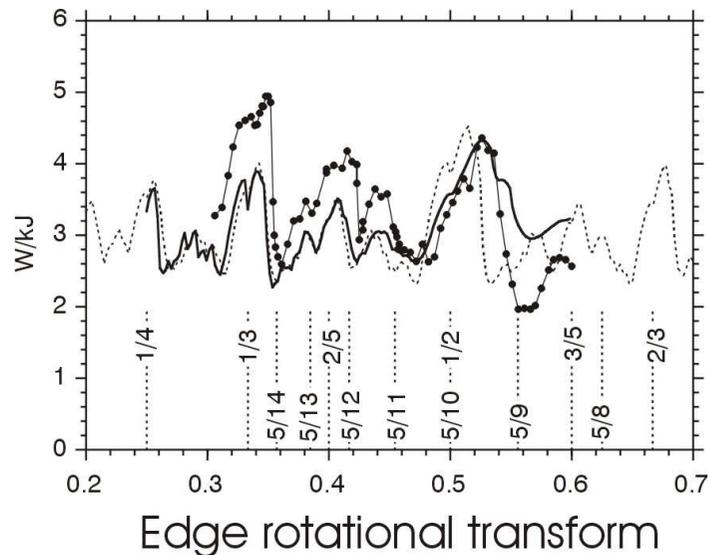
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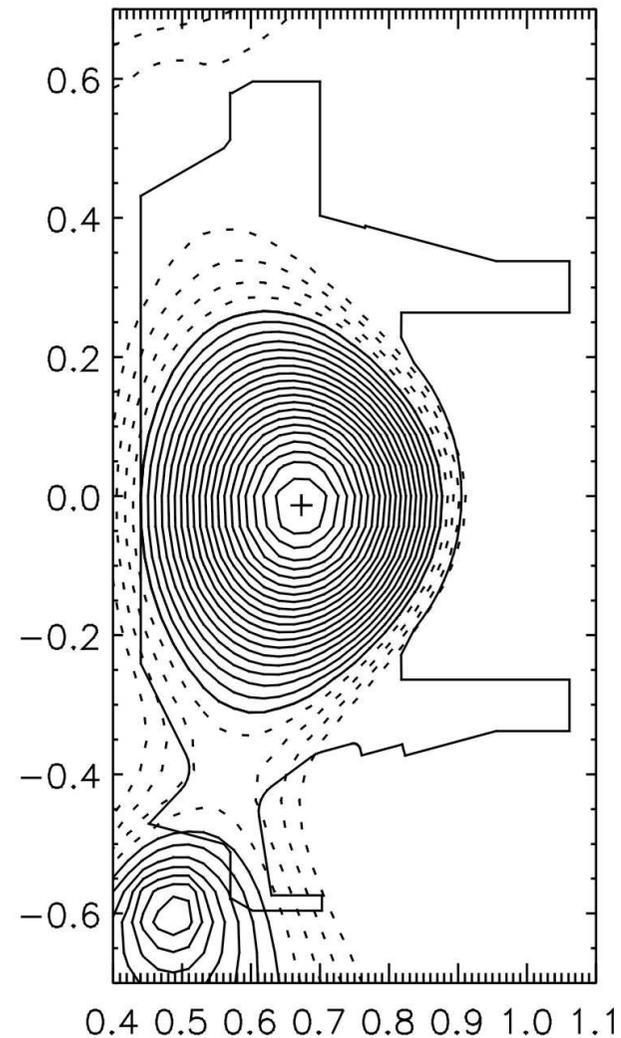
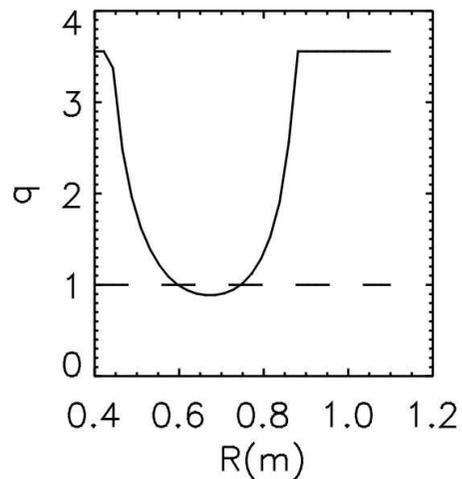
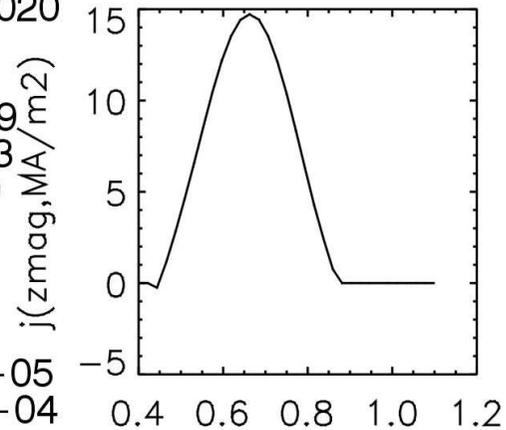
This idea originates from density fluctuation studies of Wendelstein 7-AS plasmas with the LOTUS small-angle scattering diagnostic.



EFIT equilibrium 1000620020

* EFITD 33x33 03/20/2000*

date ran = 20-JUN-00
shot # = 1000620020
time (s) = 0.6000
chi**2 = 8.21
rout(cm) = 65.869
zout(cm) = -2.263
a(cm) = 21.849
elong = 1.321
utriang = 0.165
ltriang = 0.239
indent = 0.000
vol(cm3) = 7.72e+05
energy(J) = 6.57e+04
betat(%) = 0.491
betap = 0.247
li = 1.186
error = 0.00279
q* = 3.507
qout = 3.557
qpsib = 3.006
dsep(cm) = -45.000
rm/rc = 67.3// 66.2
zm/zc = -1.3// -1.4
data used:
ip(kA) = -948.560
bt0(T) = -5.376



EFIT equilibrium 1031203019

* EFITD 33x33 06/28/2003*

date ran = 3-Dec-03

shot # = 1031203019

time (s) = 1.1500

chi**2 = 24.2

rout(cm) = 66.035

zout(cm) = 0.373

a(cm) = 22.025

elong = 1.329

utriang = 0.141

ltriang = 0.148

indent = 0.000

vol(cm3) = 7.98e+05

energy(J) = 5.85e+04

betat(%) = 0.416

betap = 0.134

li = 1.044

error = 0.00261

q* = 2.774

qout = 2.752

qpsib = 2.409

dsep(cm) = -45.000

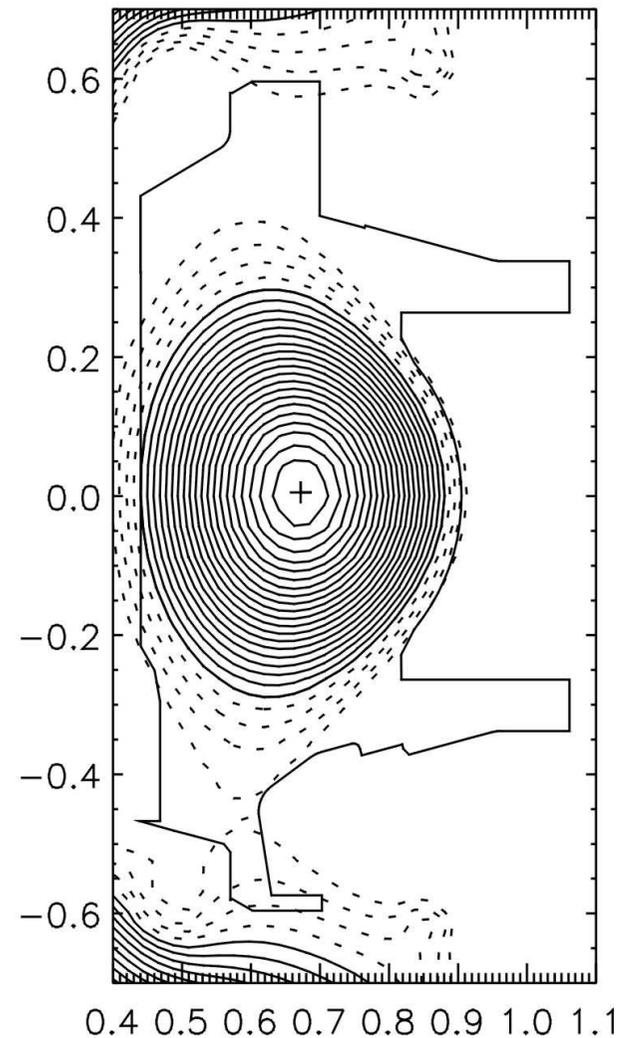
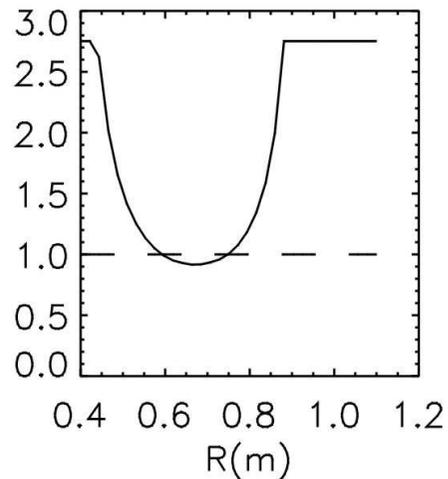
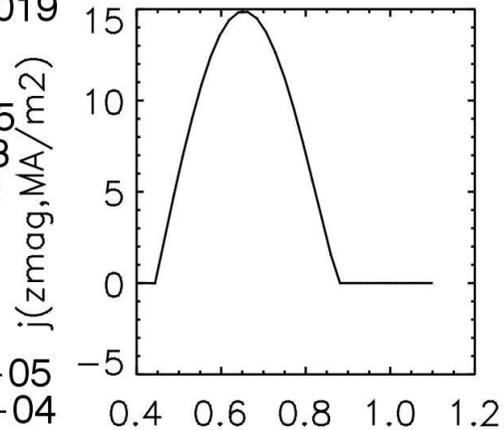
rm/rc = 67.2// 65.9 σ

zm/zc = 0.5// 0.6

data used:

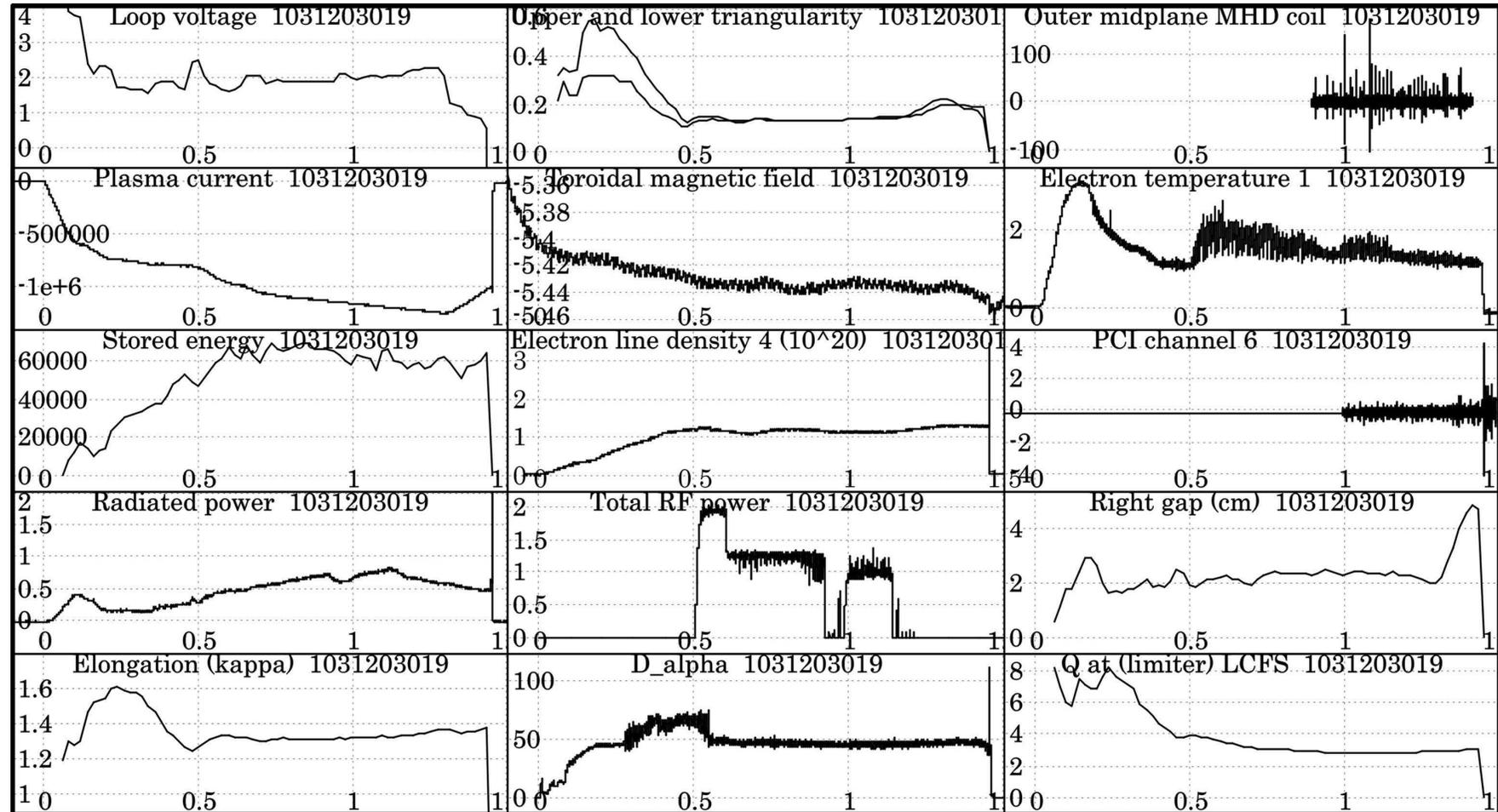
ip(kA) = -1219.928

bt0(T) = -5.438



Waveforms shot 1031203019

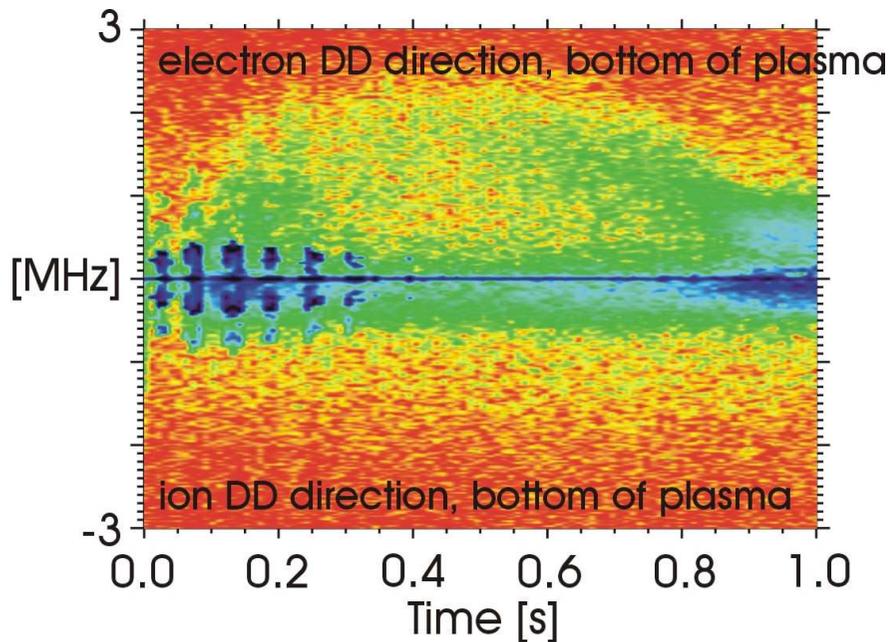
17 plasmas



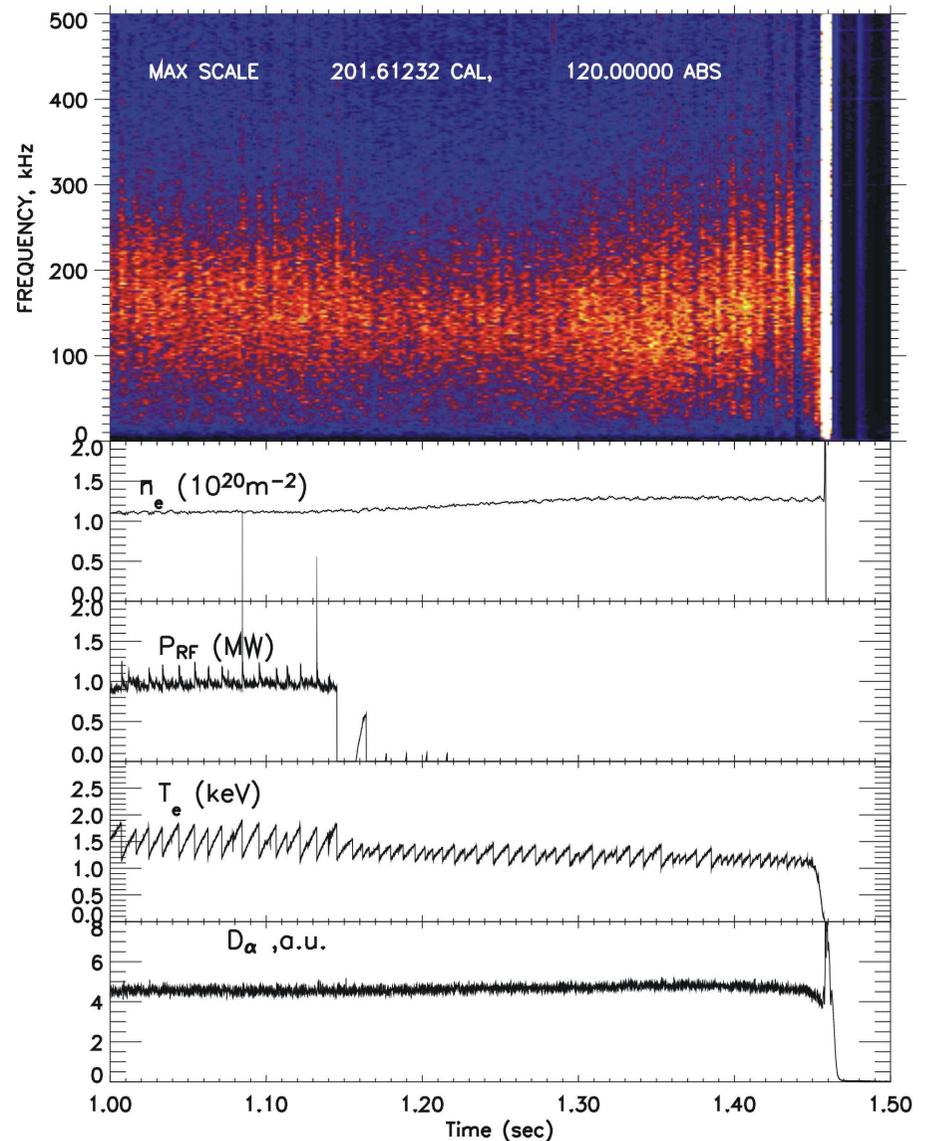
To do: Finalise discharge development (current ramp, triangularities, q_a 2.6 etc.). Scans of density, flattop current and ICRF power.

Density fluctuations

Below: Localised spectrogram of density fluctuations at 15 cm^{-1} in W7-AS.

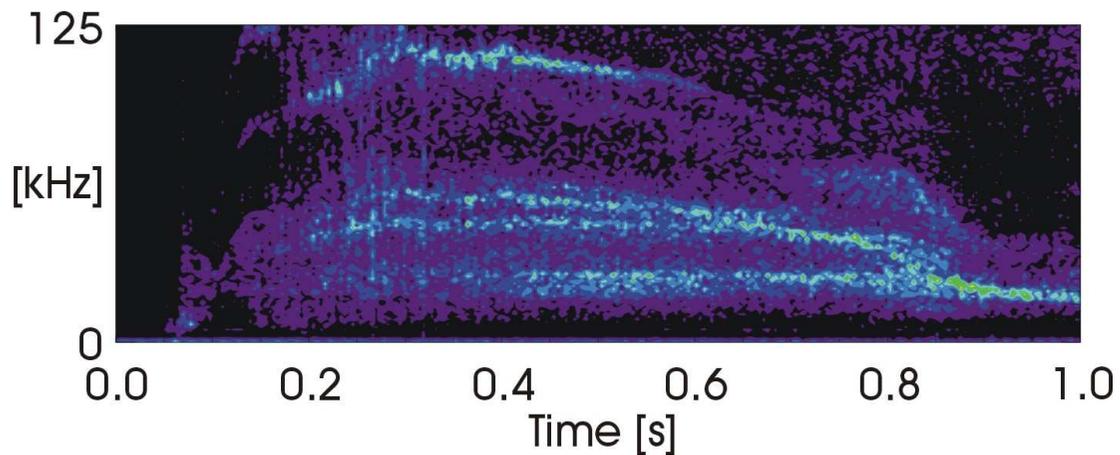
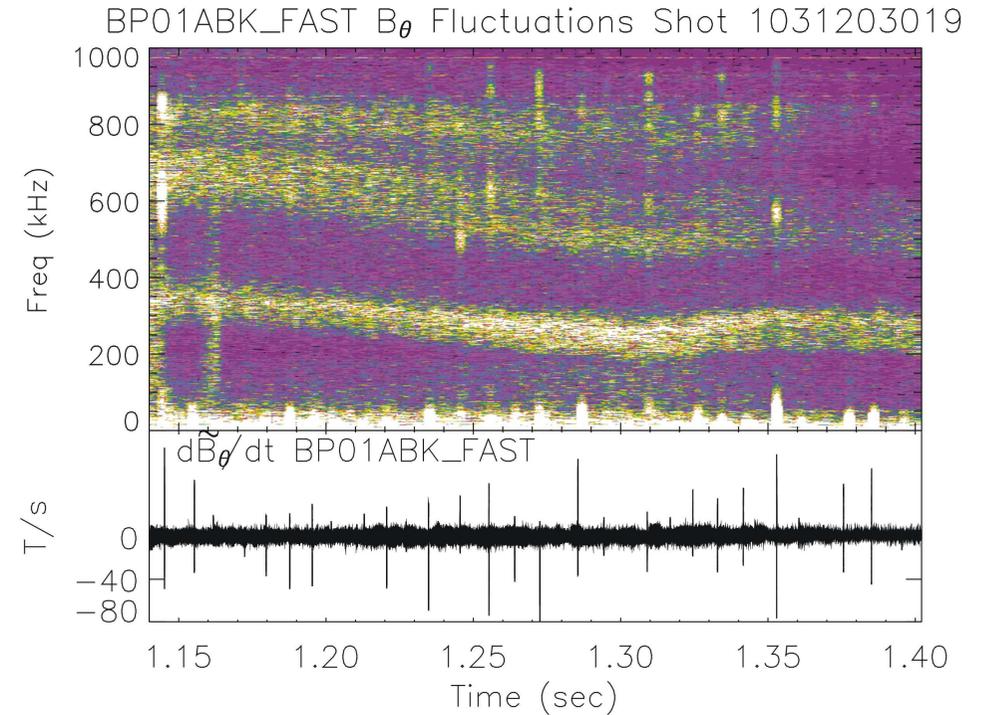


1031203019(ch.1), PCI SIGNAL IN (ω, t) SPACE



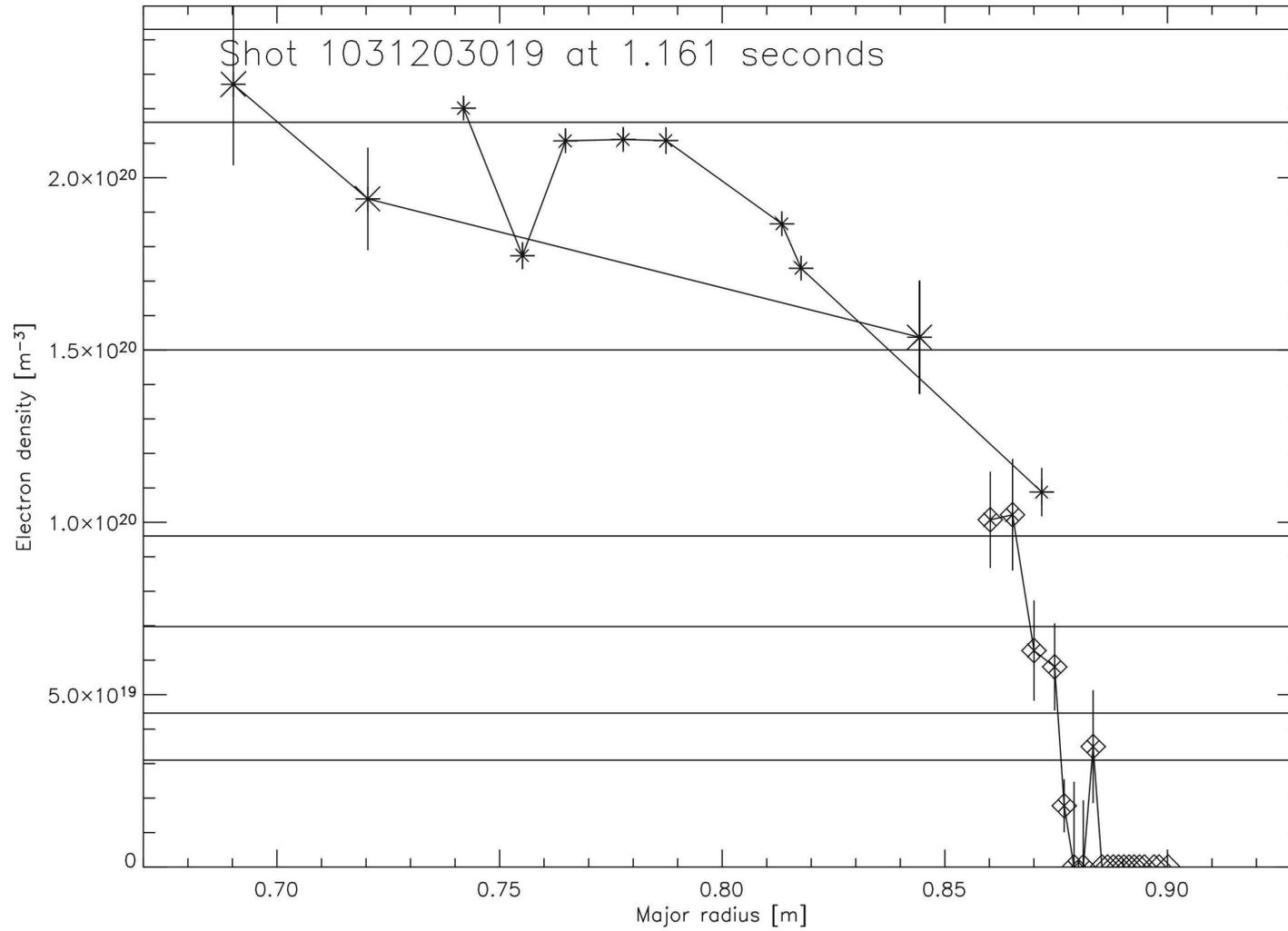
Magnetic fluctuations

Right: Spectrogram of coil 24 in C-Mod.



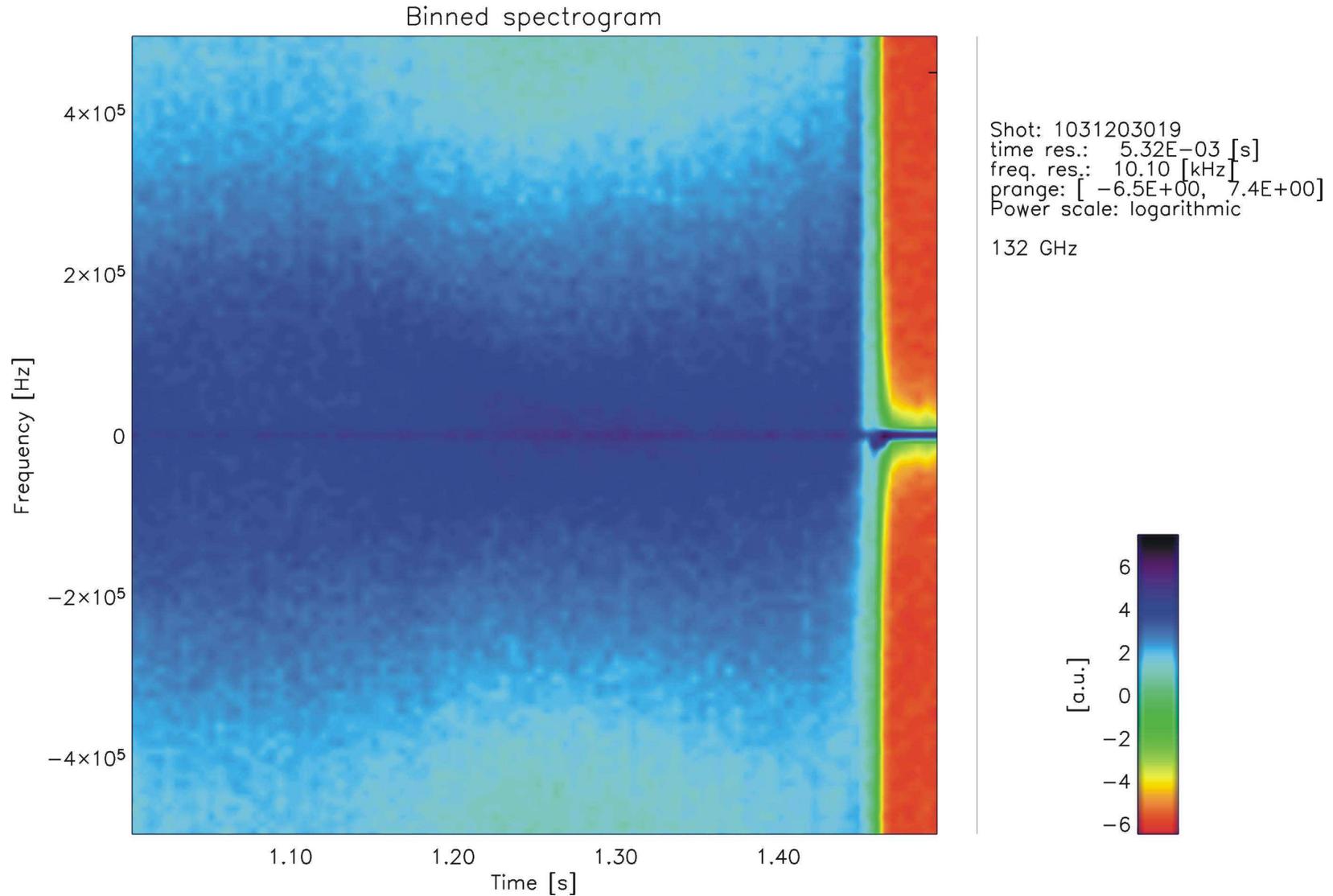
Left: Spectrogram of Mirnov coil in W7-AS.

Thomson density profile



Profile for minimum $q_a = 2.75$.

Reflectometry



Spectrogram of the 132 GHz reflectometry channel ($2.2 \times 10^{20} \text{ m}^{-3}$).