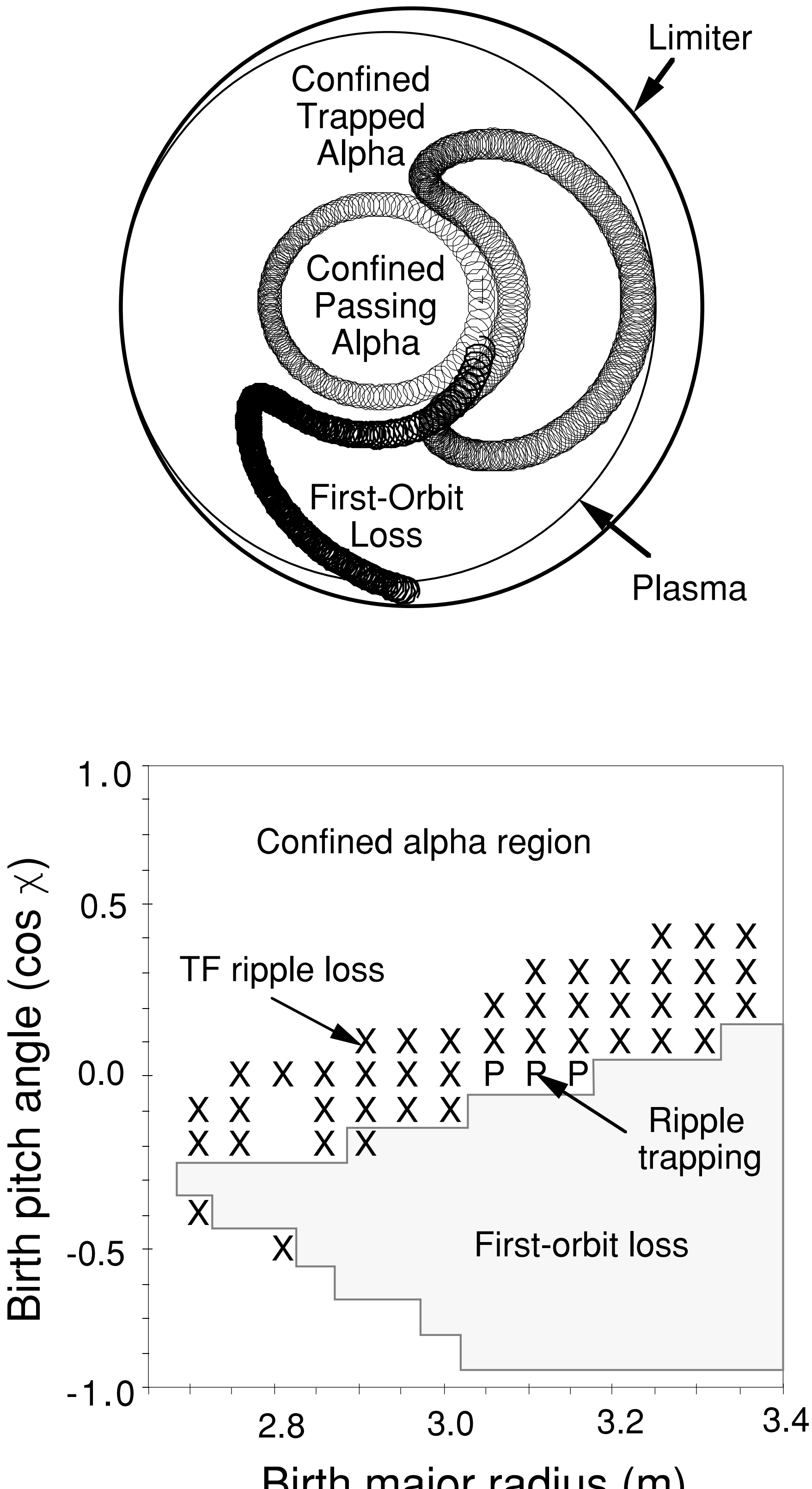

Limiter
Confined Trapped Alpha
Confined Passing Alpha
First-Orbit Loss
Plasma
1.0
0.5
0.0
-0.5
-1.0
Birth pitch angle (cos χ)
Confined alpha region
TF ripple loss
Ripple trapping
First-orbit loss
2.8
3.0
3.2
3.4
Birth major radius (m)

Fig. 1

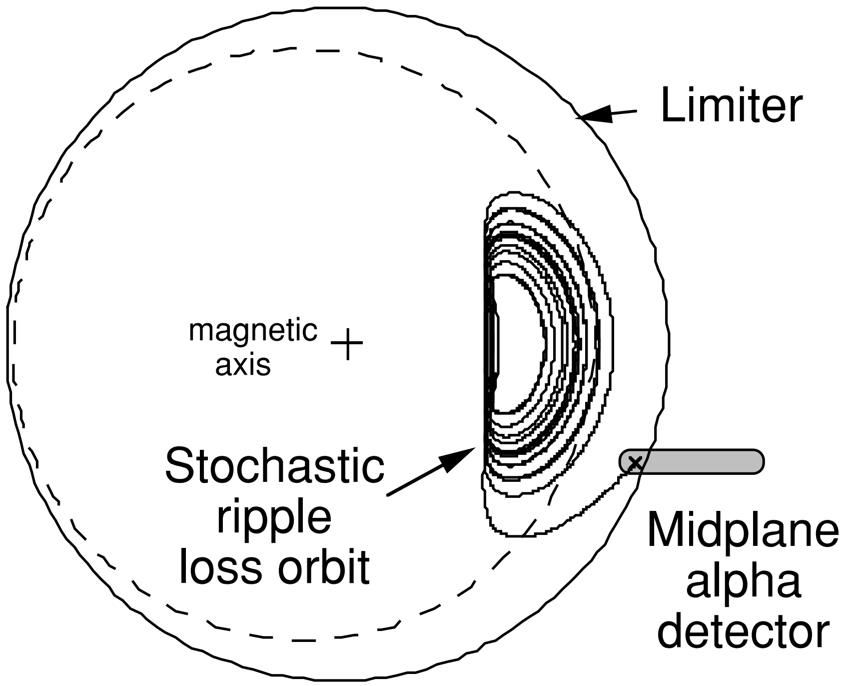
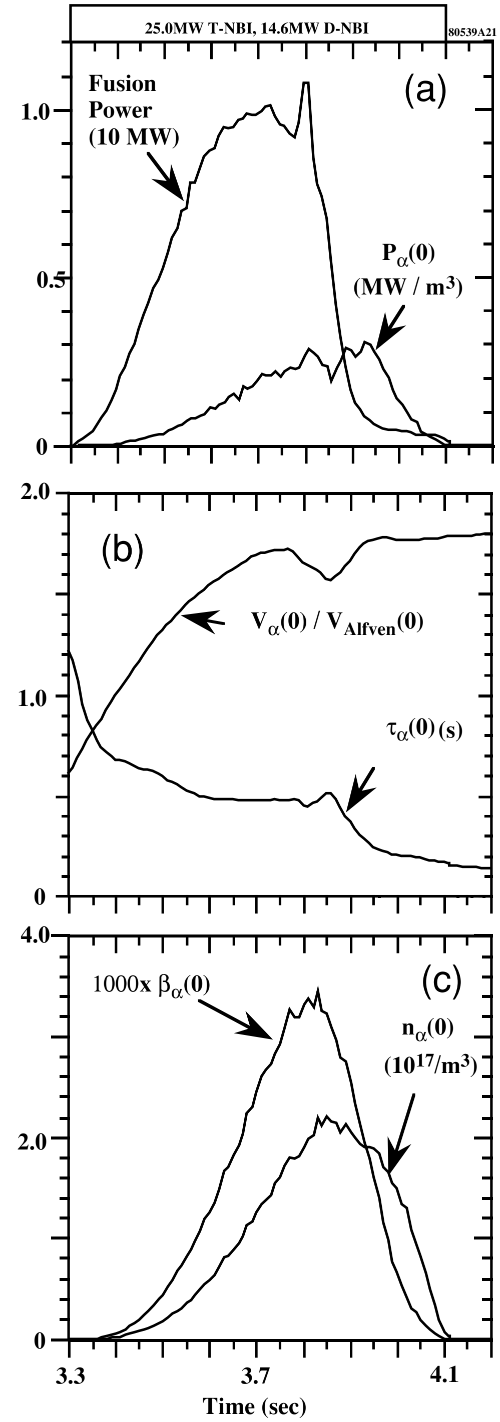

Limiter
magnetic
axis
Stochastic
ripple
loss orbit
Midplane
alpha
detector

Fig. 2



25.0MW T-NBI, 14.6MW D-NBI
80539A21
(a)
Fusion
Power
(10 MW)
$P_\alpha(0)$
(MW / m^3)
1.0
0.5
0
(b)
$V_\alpha(0)$ / $V_{Alfven}(0)$
$\tau_\alpha(0)$ (s)
2.0
1.0
0
(c)
1000x $\beta_\alpha(0)$
$n_\alpha(0)$
(10^{17}/m^3)
4.0
2.0
0
3.3
3.7
4.1
Time (sec)

Fig. 3

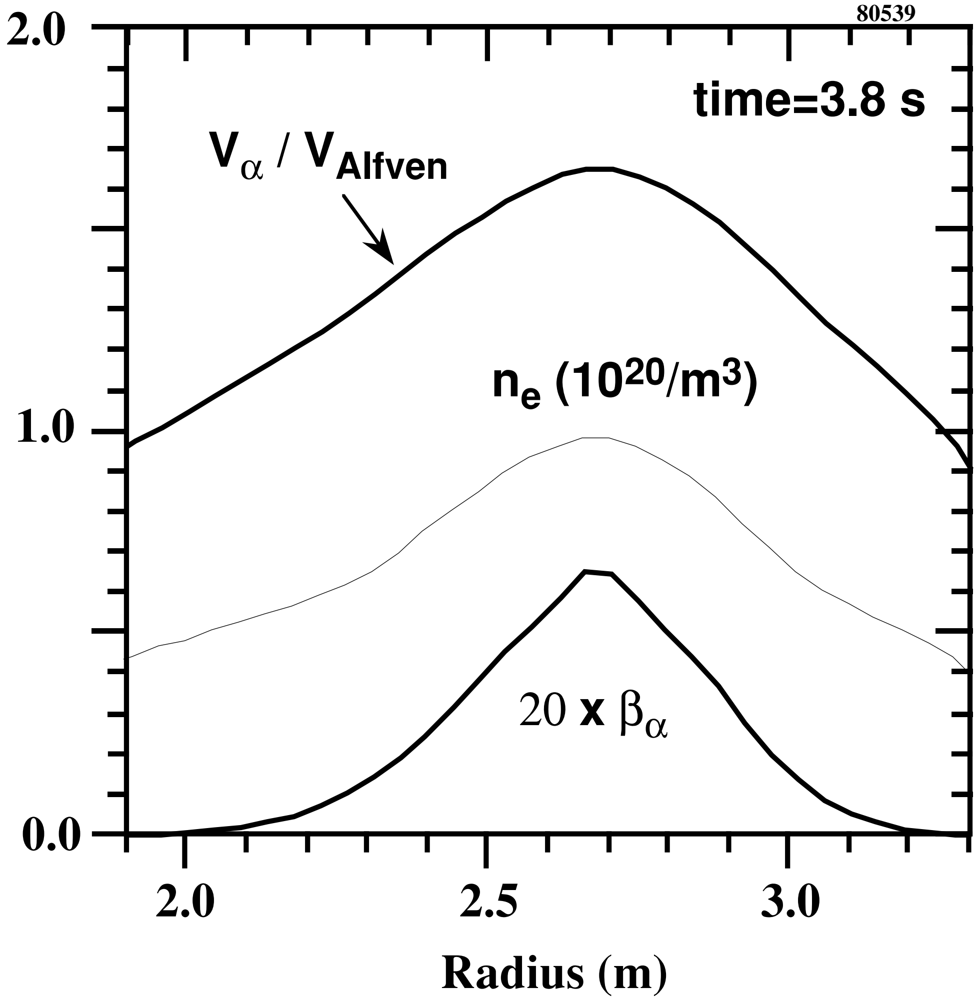
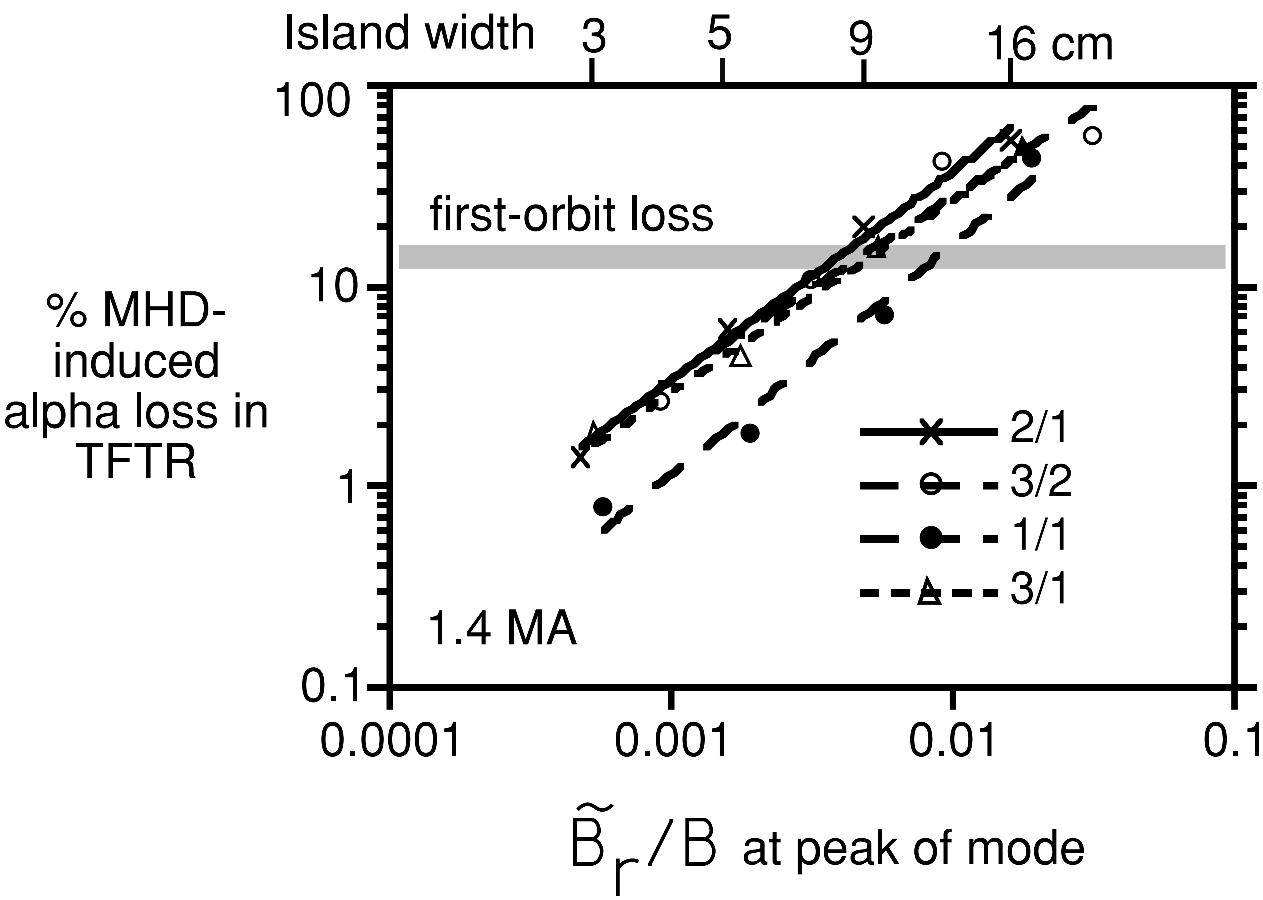

80539
time=3.8 s
V_α / V_{Alfven}
n_e ($10^{20}/m^3$)
20 x β_α
2.0
1.0
0.0
2.0
2.5
3.0
Radius (m)

Fig. 4



Island width
3
5
9
16 cm
100
10
1
0.1
first-orbit loss
% MHD-induced alpha loss in TFTR
2/1
3/2
1/1
3/1
1.4 MA
0.0001
0.001
0.01
0.1
$\tilde{B}_r/B$ at peak of mode

Fig. 5

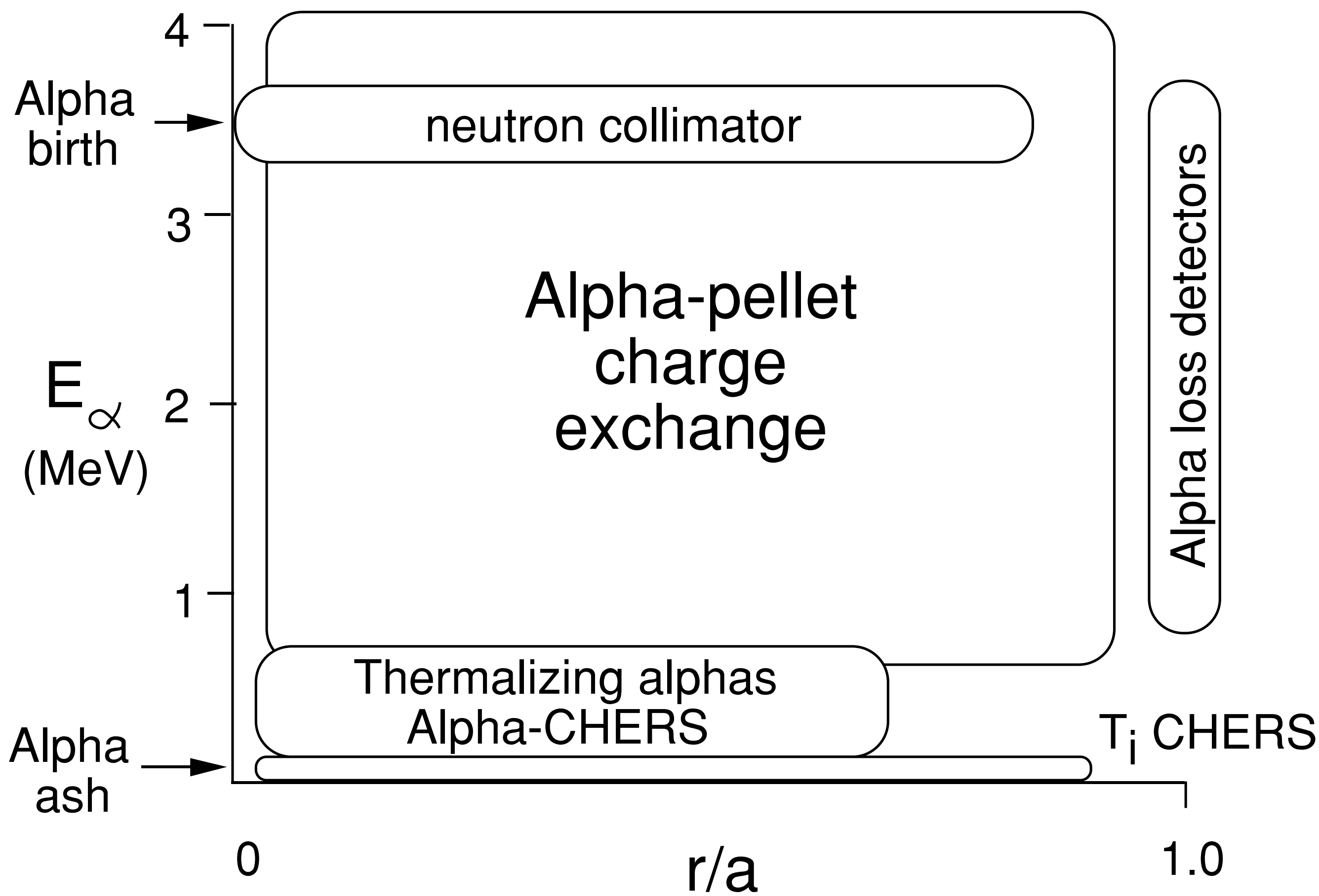

4
3
2
1
Alpha
birth
Alpha
ash
E$_\alpha$
(MeV)
neutron collimator
Alpha-pellet
charge
exchange
Alpha loss detectors
Thermalizing alphas
Alpha-CHERS
T$_i$ CHERS
0
r/a
1.0

Fig. 6