



Result of PIES Calculation

(September 06, 2000; Chang Jun in PPPL)

- 1) **Introduction of PIES result plots**
- 2) **383 Fixed Boundary Configuration Fixed Boundary**
- 3) **383 Free Boundary Configuration with Saddle Coils**
- 4) **383 Free Boundary Configuration with Modular Coils**

PIES code

Closer actual situation than VMEC code -> Consideration of Islands

**Takes long time to converge: 2000 iterations in VMEC -> 5min (CRAY)
1 iteration in PIES -> 30min (CRAY)**

Procedure:

- 1) **VMEC Run for parameters**
- 2) **VP run for coordinates**
- 3) **Spline Making**

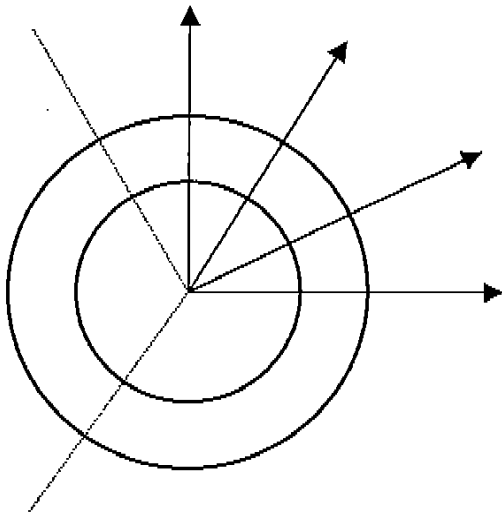
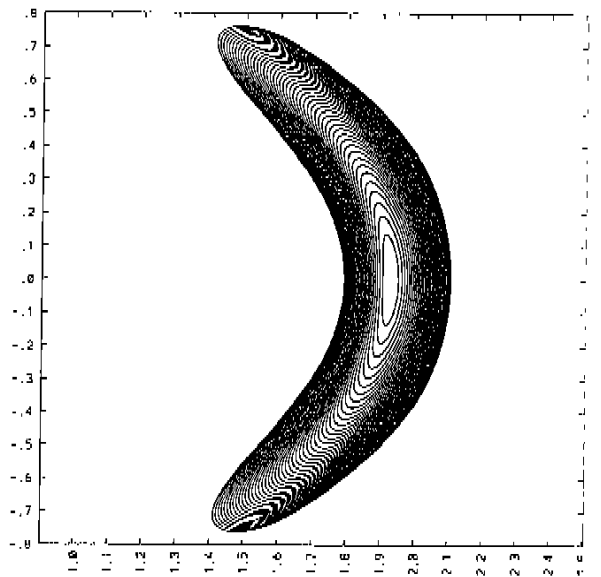
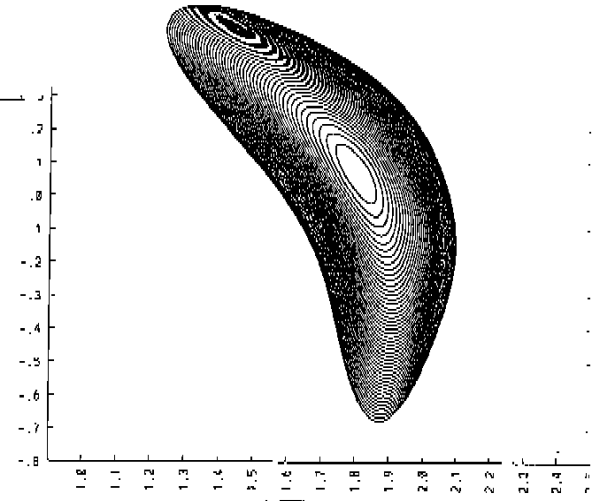
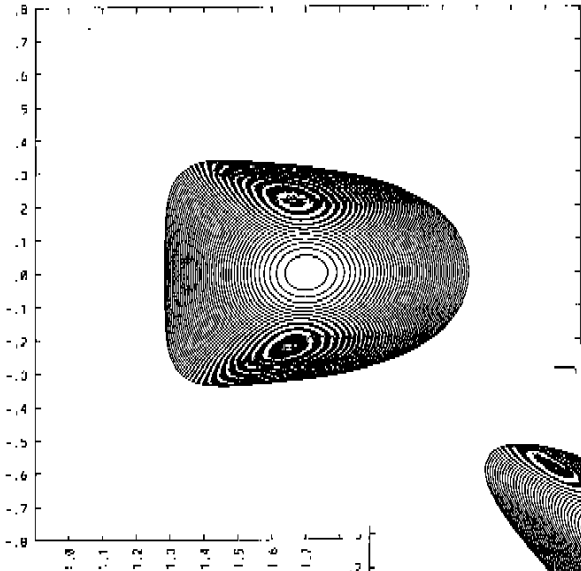
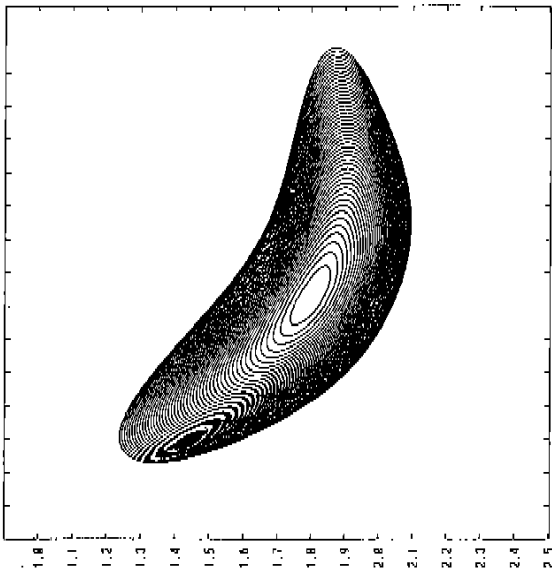
Structure:

- 1) **Parameters**
- 2) **Coordinates**
- 3) **Spline data for Pressure and Current profile**

Running:

- 1) **Fixed boundary case**
- 2) **Free boundary case**

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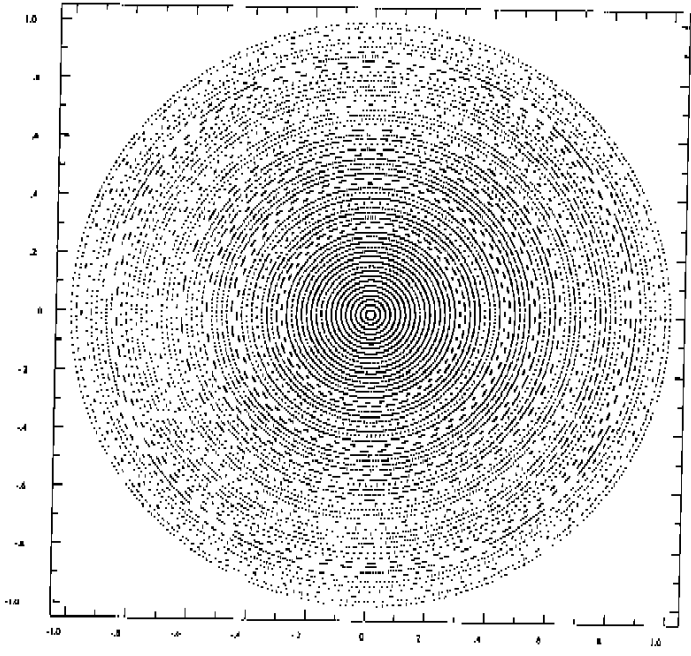
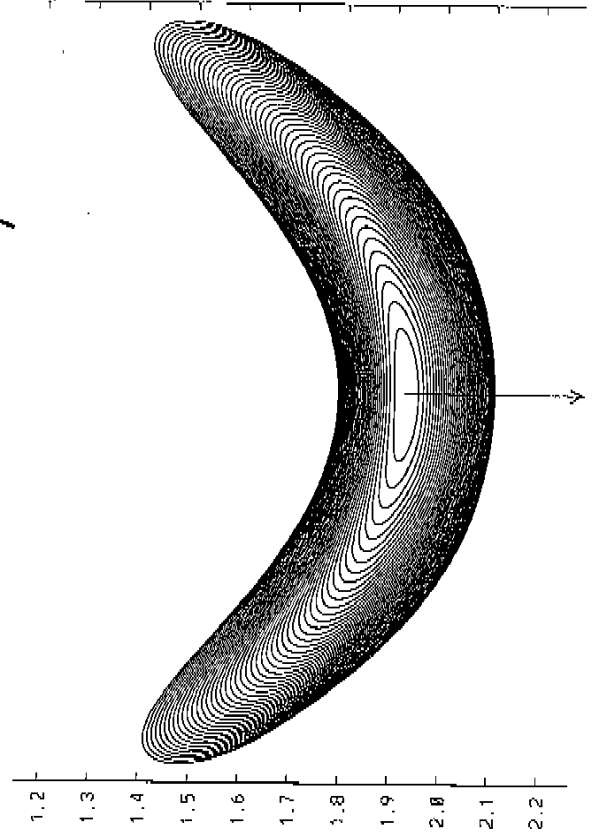
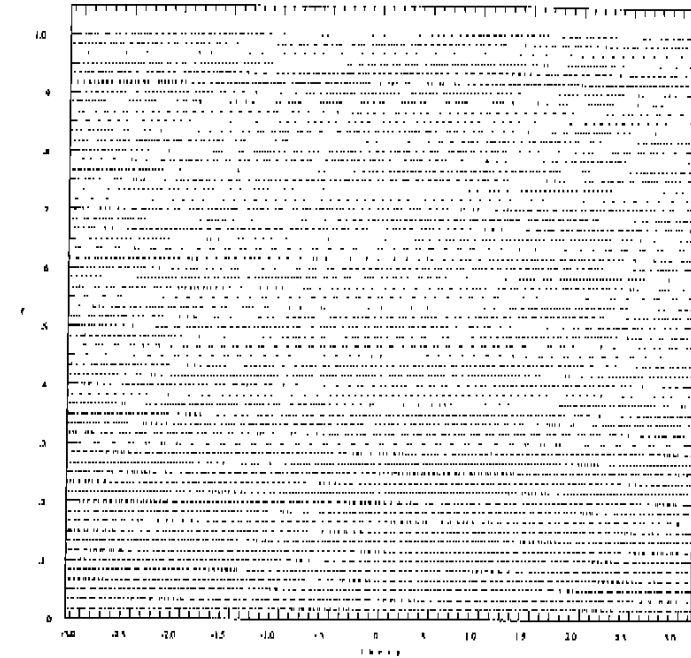


Section Shape of Plasma according to Toroidal Angle

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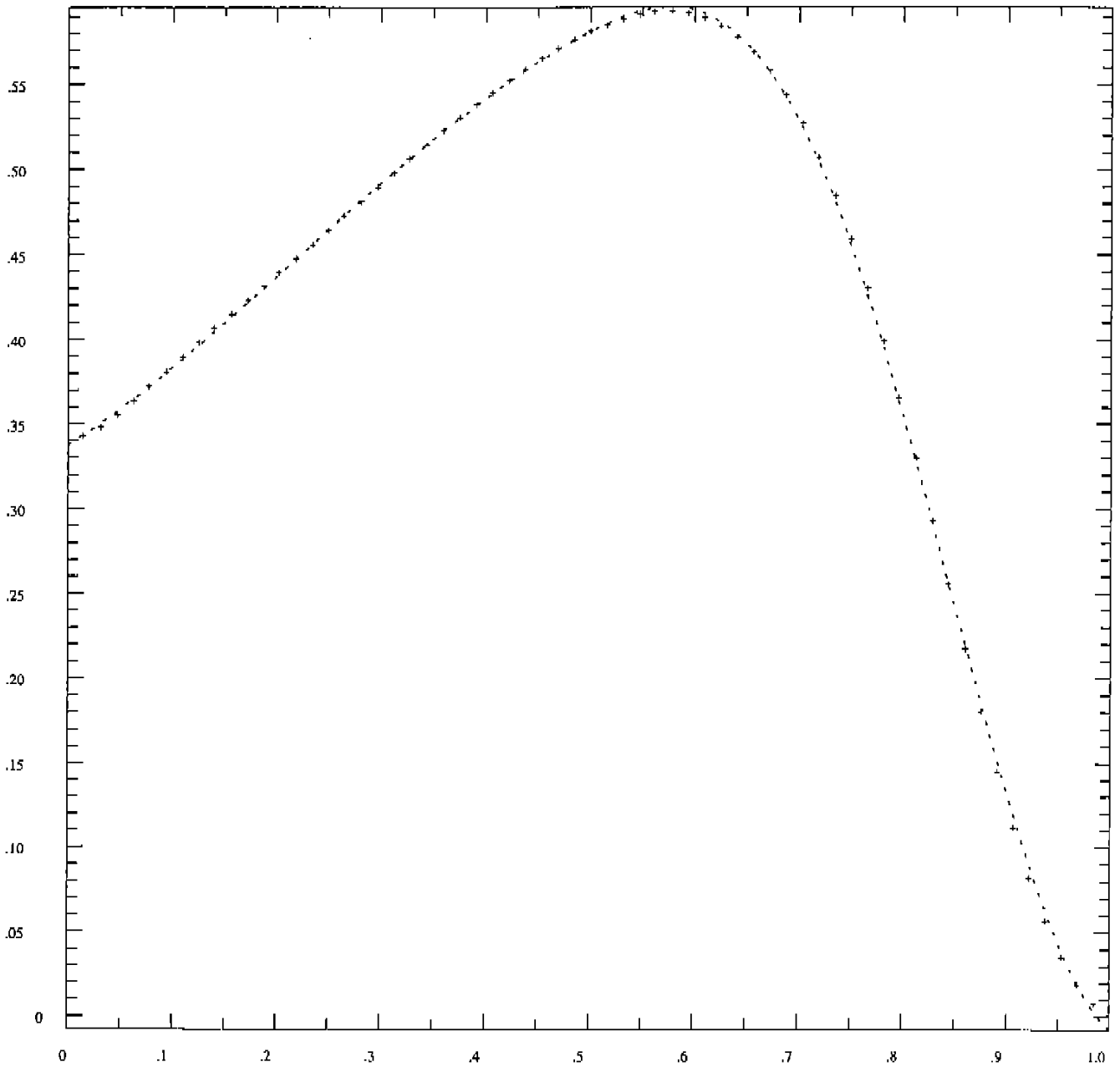


Mapping of Field Line Coordinates for Better Visualization

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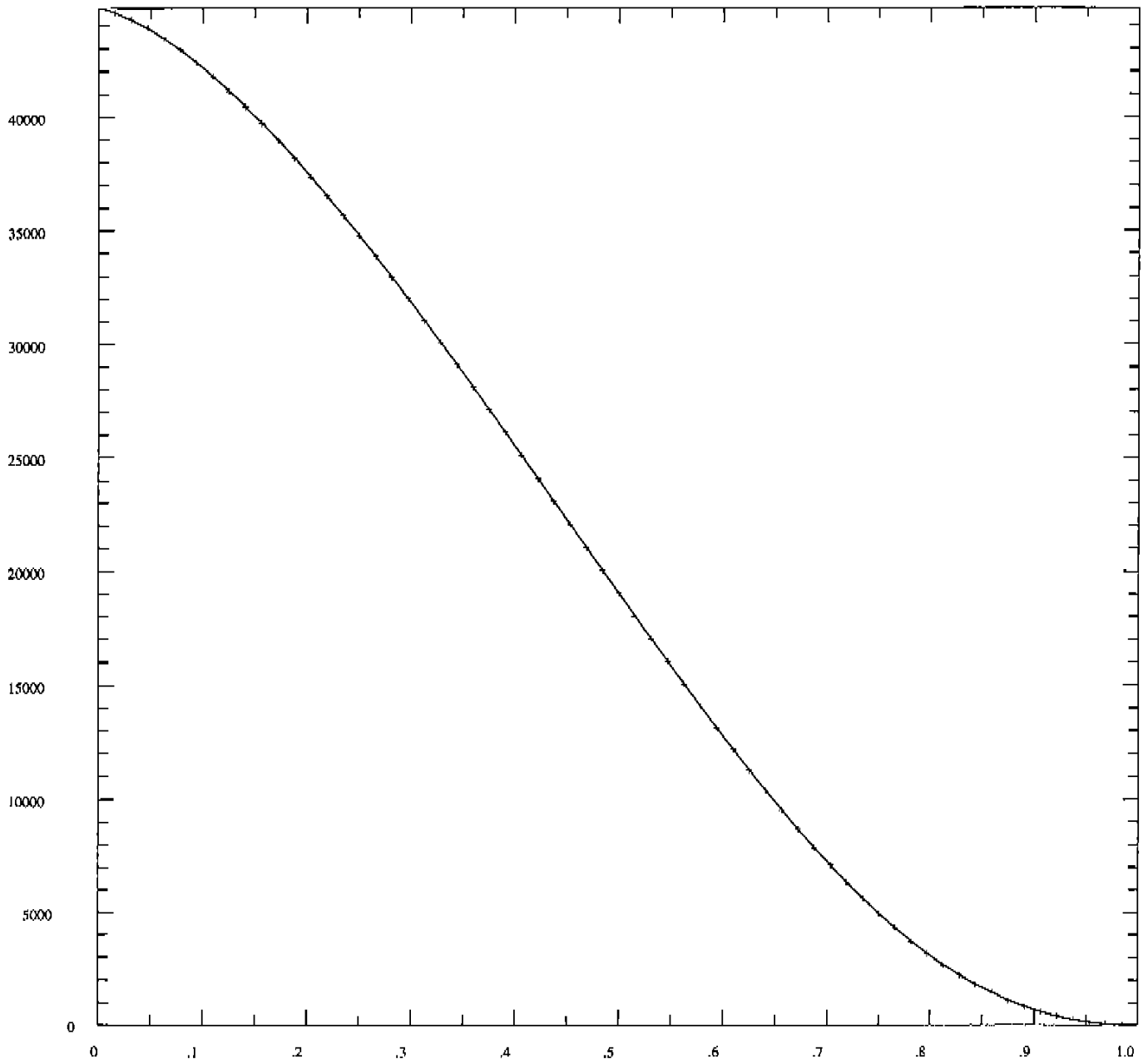


dI/dPsi(A/Webers) vs psi t

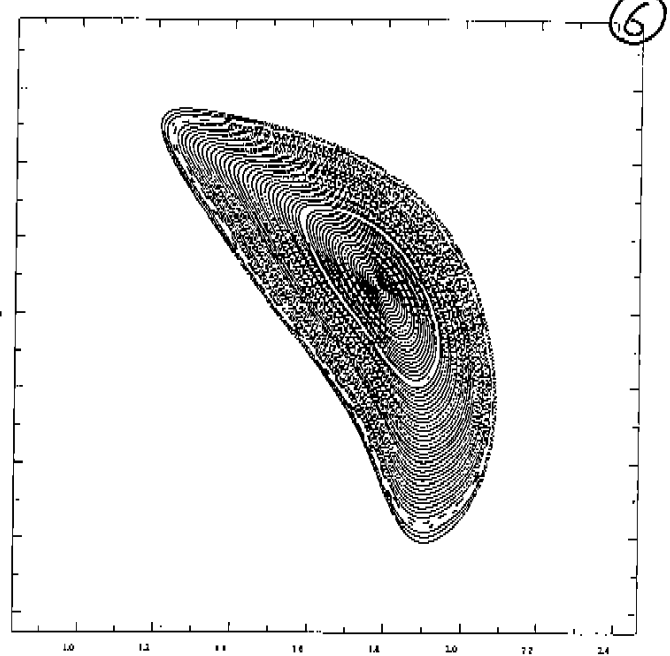
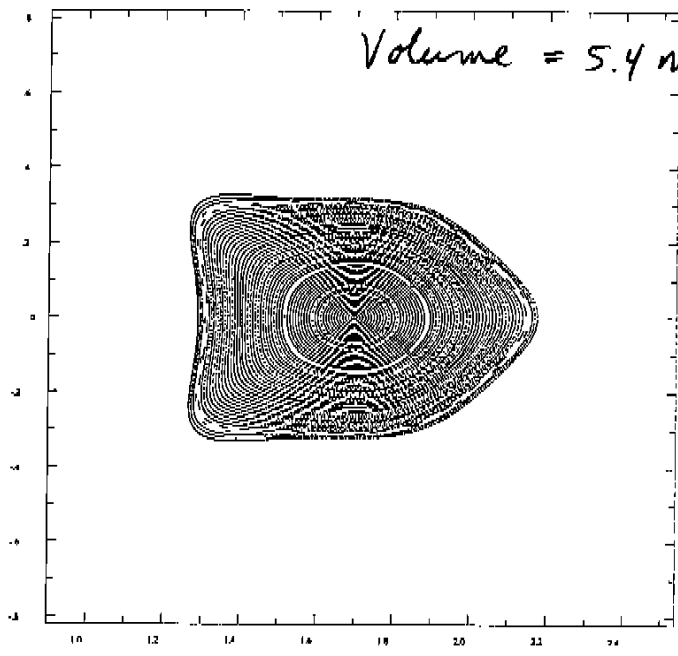
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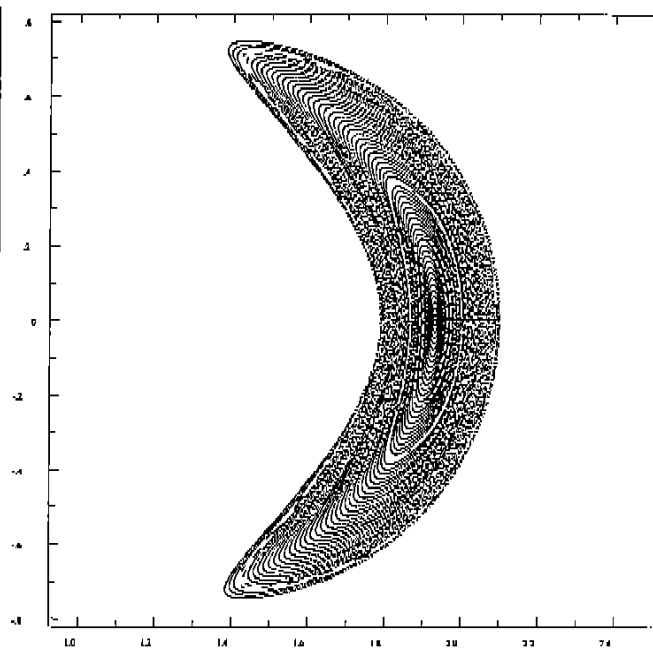
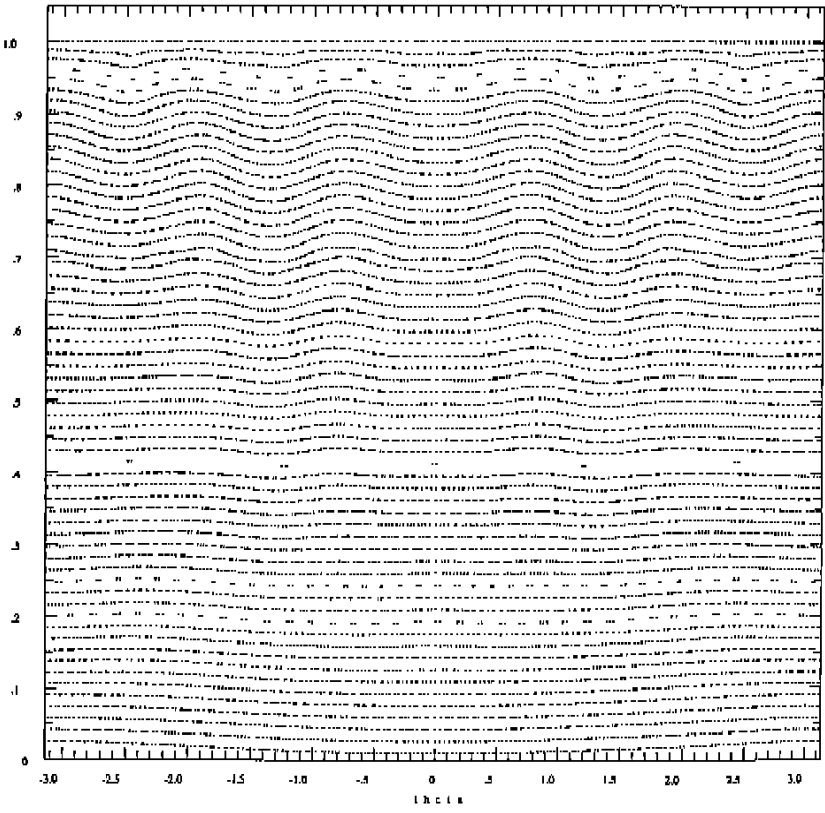


P(Pascals) vs psi t



ii=202 polncm: cart. coord. phi approx. eq. pi/npet
****/****

ii=202 polncm: cart. coord. phi approx. eq. pi/3npet
****/****



ii=202 polncm: cartesian coordinates phi=0
****/****

ii=202 rpoine: background coordinates

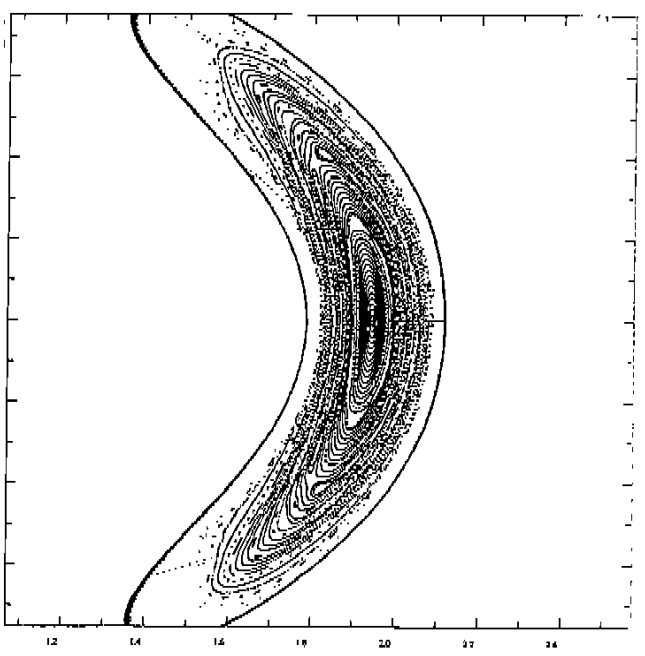
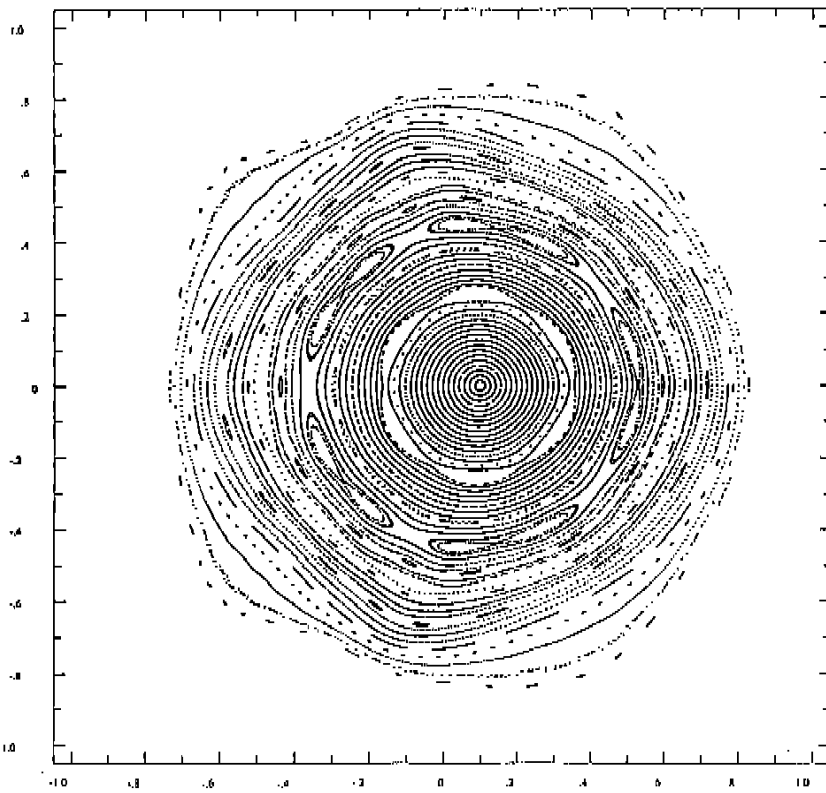
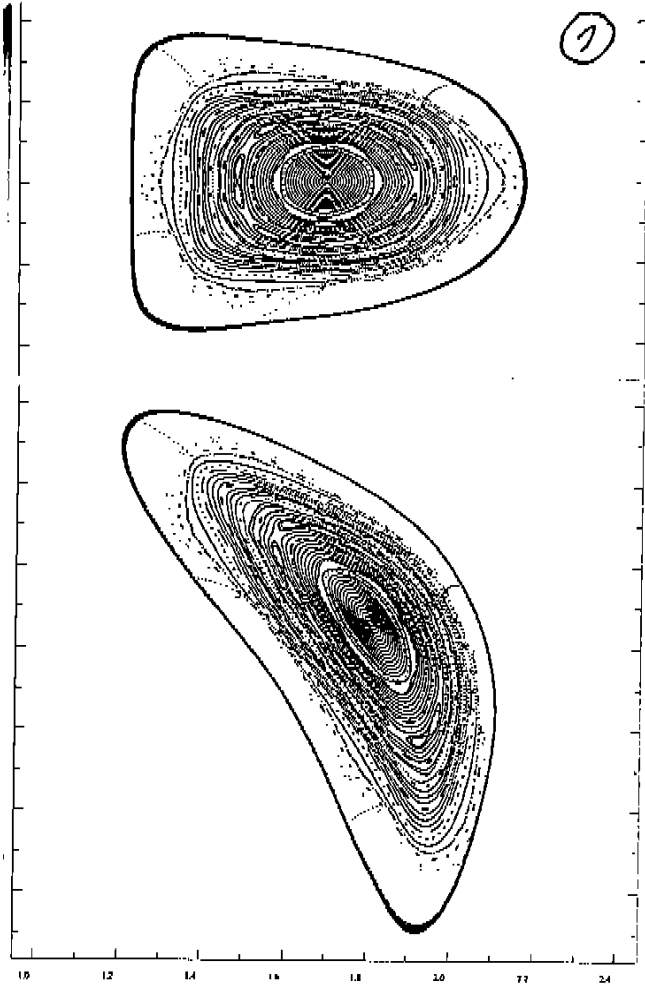
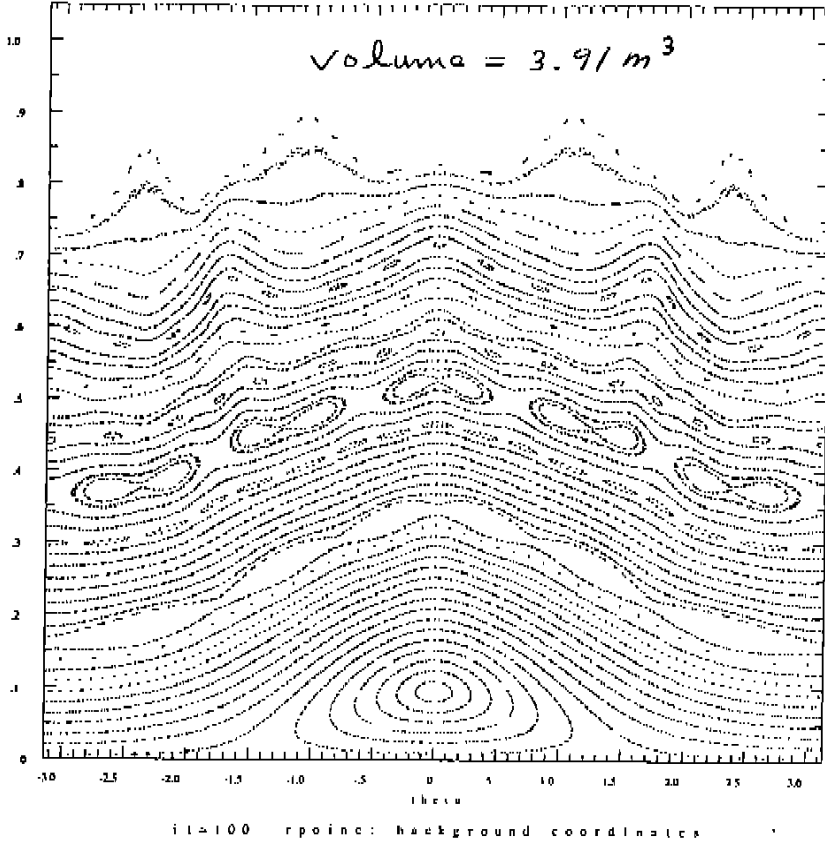
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Field Lines for 383 Case (Fixed Boundary) with c82 Pressure and Current Profile

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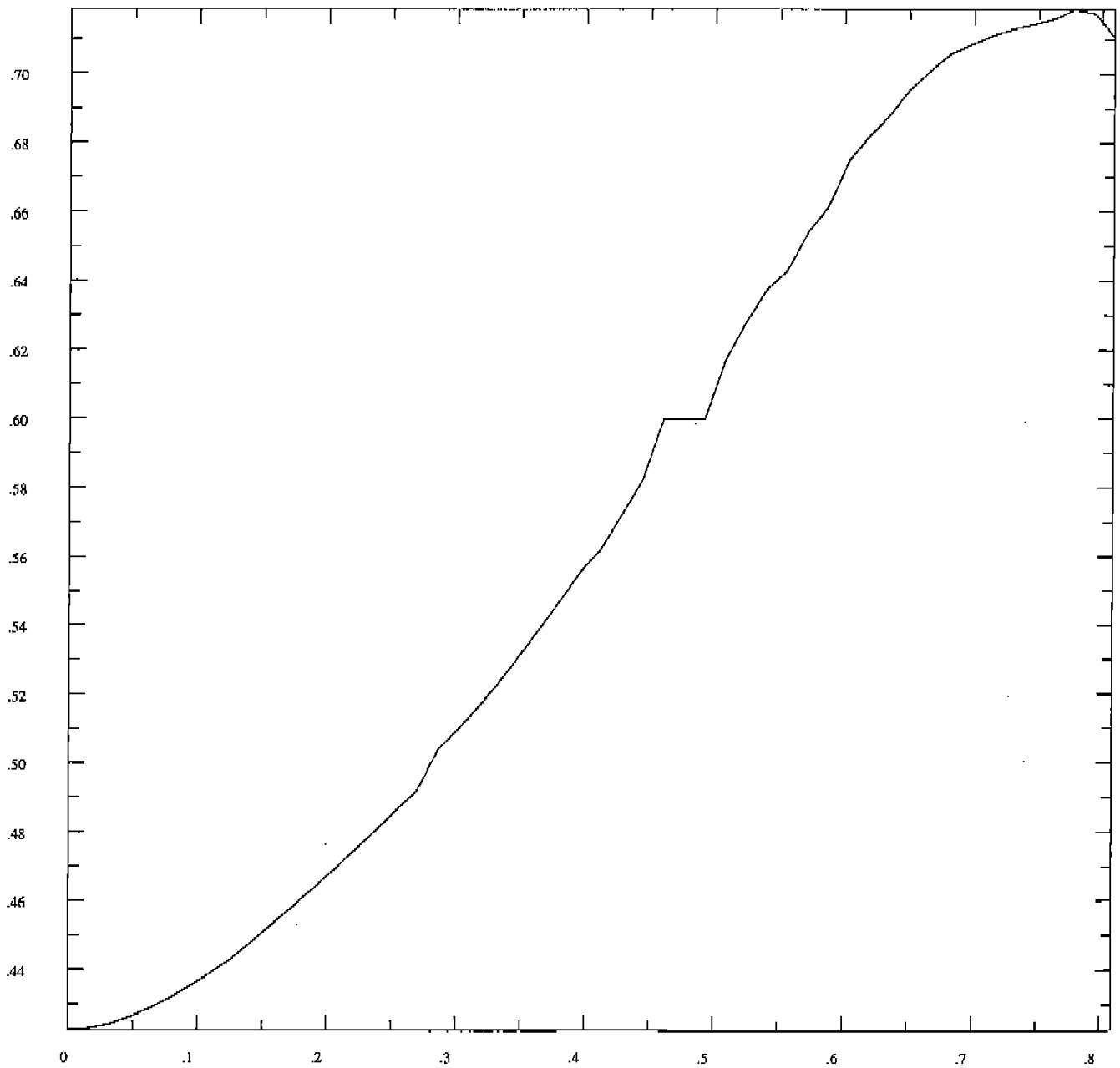


Field Lines of 383 Free Boundary Case with Modular Coils
(100 Iteration)

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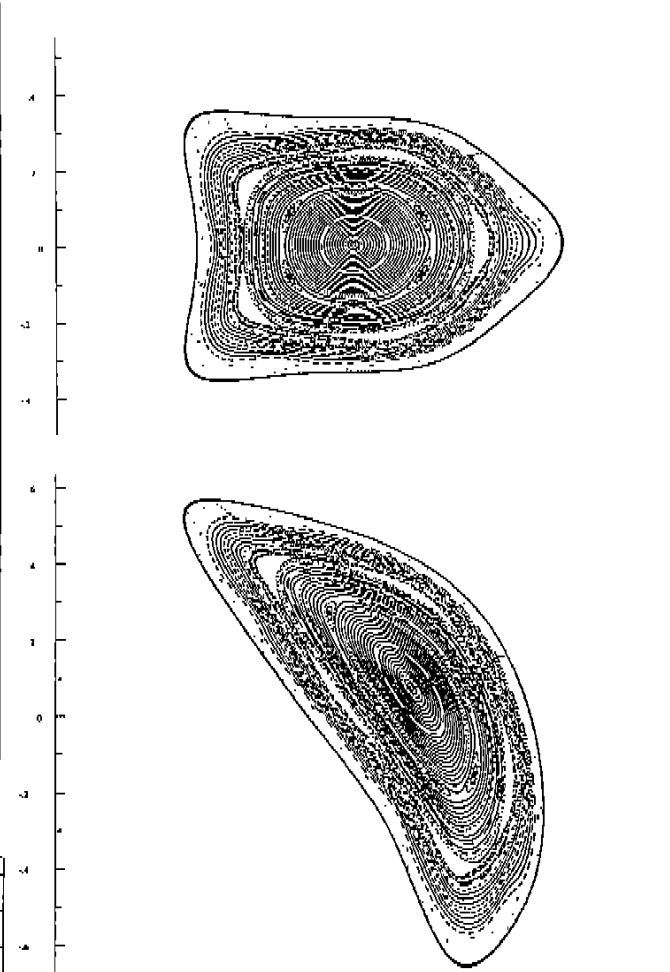
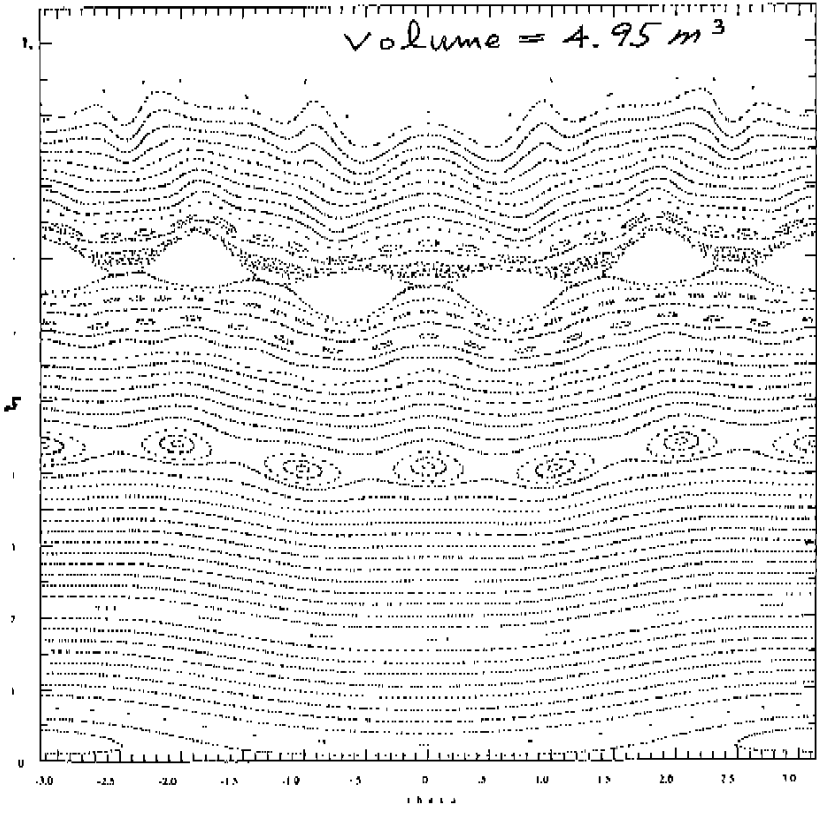


it=100 blend: unfiltered iota

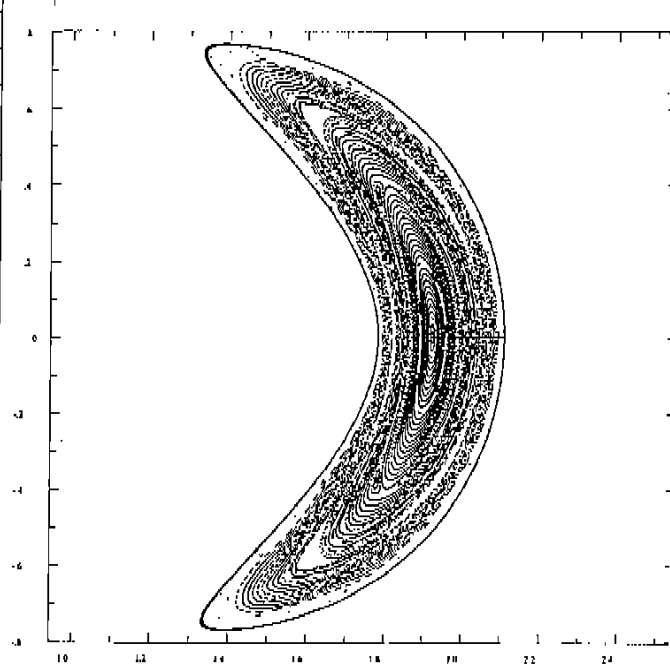
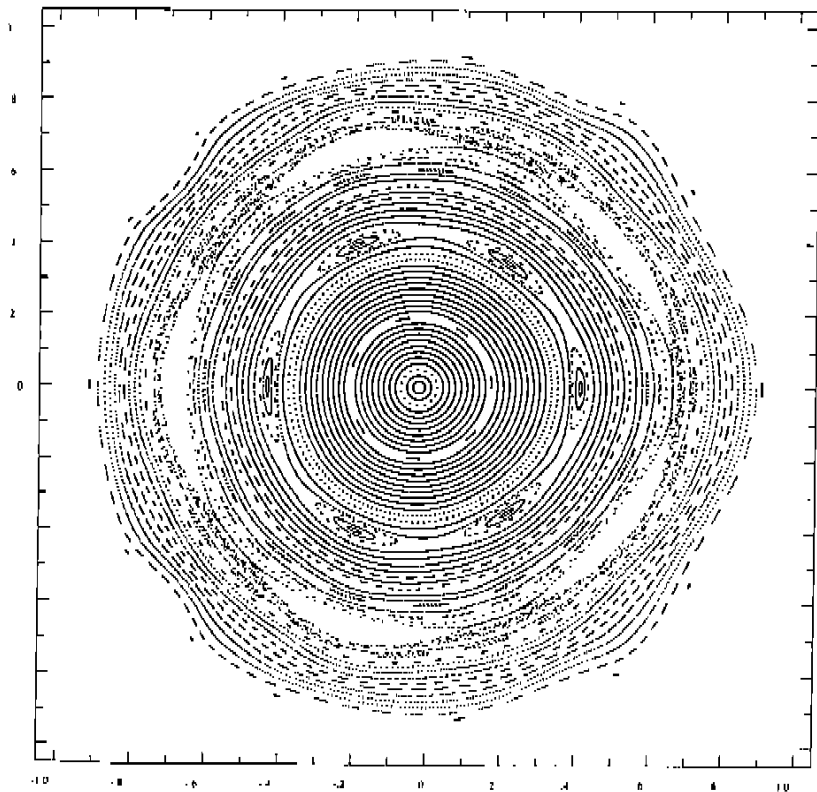
p383way4

Plot 263

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it=130 rpinc background coordinates

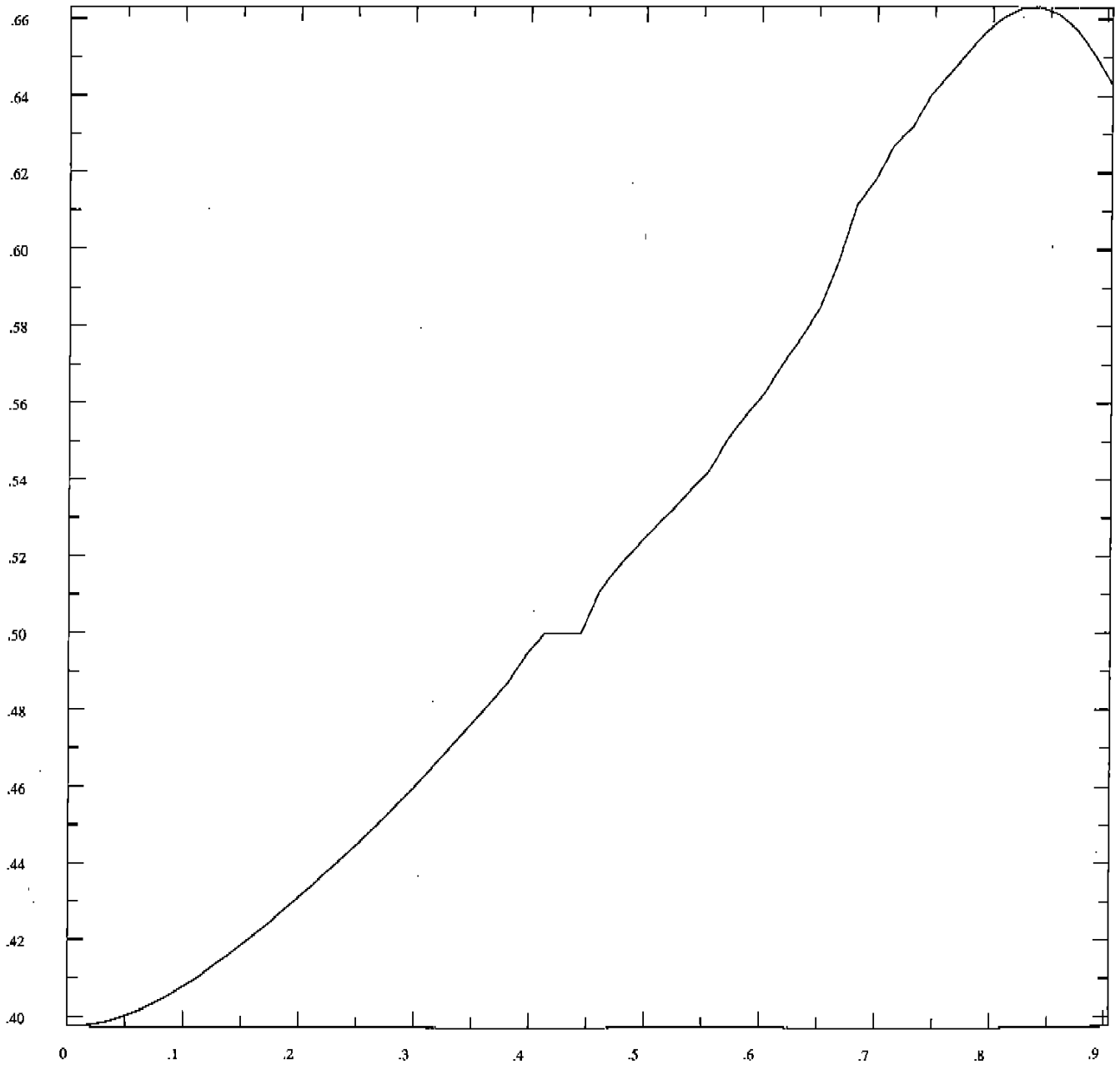


Field Lines of 383 Free Boundary Case with Saddle Coils
(130 iteration)

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it=130 blend: unfiltered iota

p383_4th

Plot 680