

# Modular Coil Design for NBI Access

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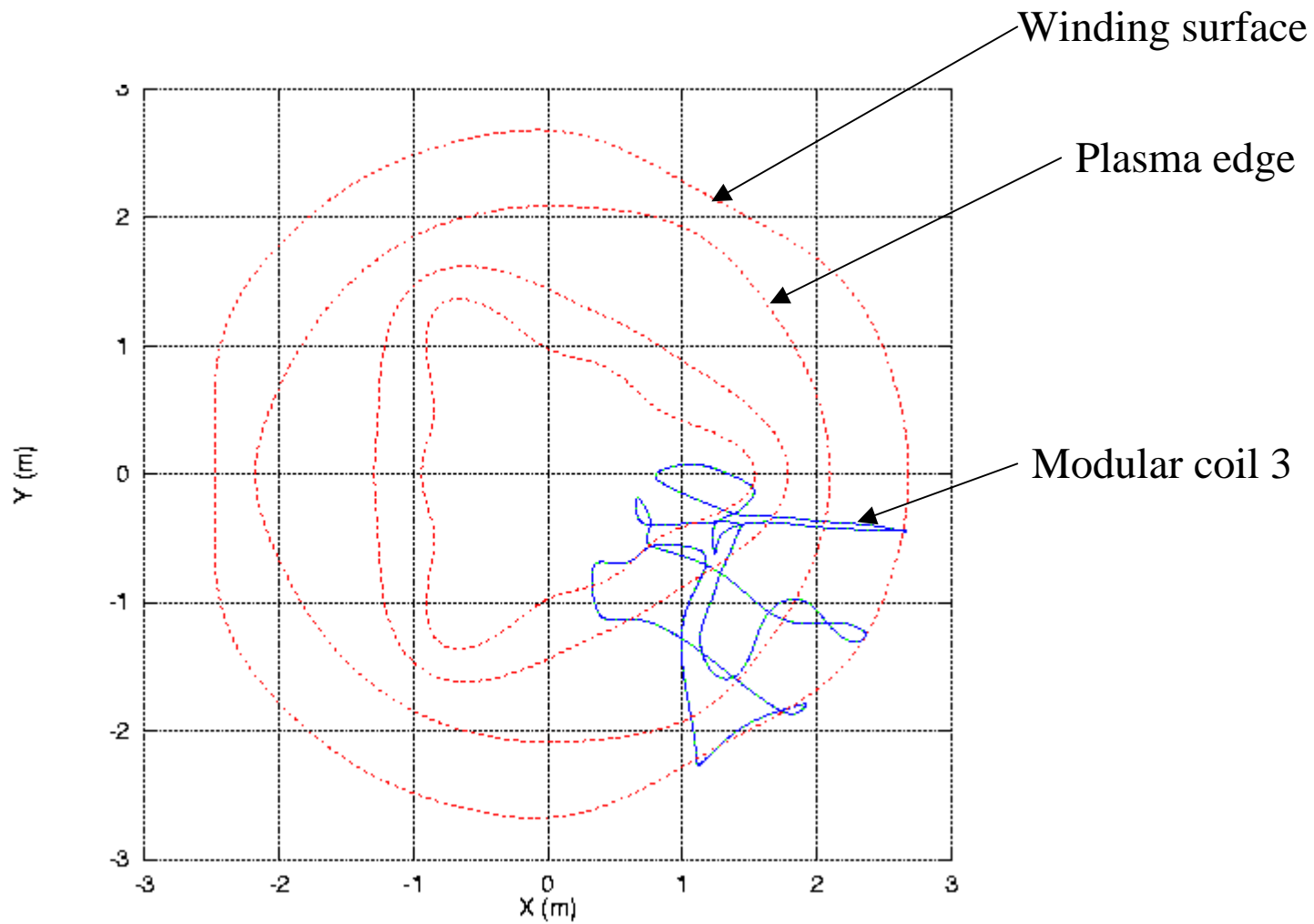
- Goal: provide space for NBI
- Options examined with CoilOpt:
  - $N_c = 6$  (modular coils per field period)
  - $N_c = 7$  – move coil 4 inward
  - $N_c = 7$  – stretch coil 4
- Free-boundary reconstructions

## Modular Solutions for LI383

ID#	$N_c$	$\delta B_{avg}$ (%)	$\delta B_{max}$ (%)	$\Delta_{cc,min}$ (cm)	$\Delta_{cp,min}$ (cm)	$\rho_{min}$ (cm)	$R_{4,max}$ (m)
0907a1	7	0.57	2.67	13.6	23.2	11.1	2.64
1005b8	6	1.13	6.61	13.6	23.7	12.26	
0929a1	7	0.68	4.67	14.1	22.4	11.2	2.56
1009a1	7	0.62	2.74	14.1	23.3	12.4	3.65

# Modular Coils for LI383

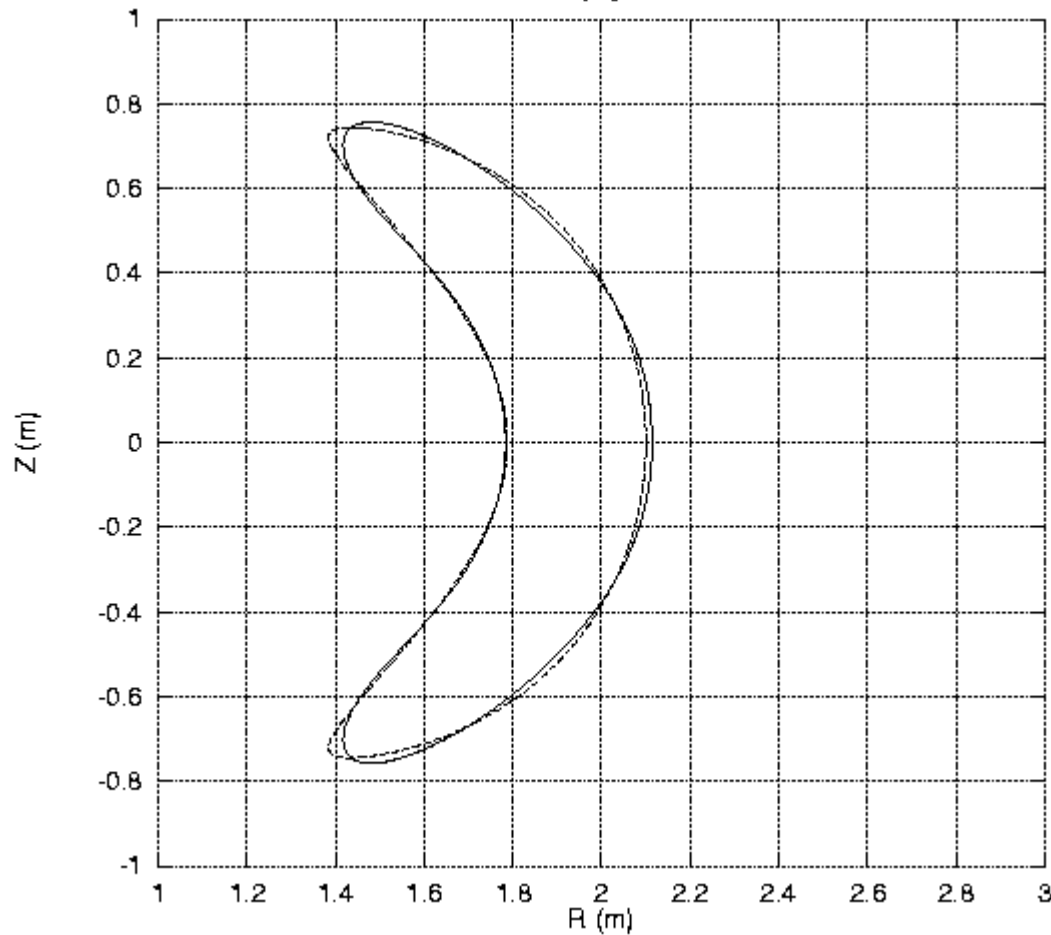
Solution 1005b8 –  $N_c=6$



# Free-boundary Reconstruction of LI383

Modular Coil Solution 1005b8 –  $N_c=6$

$$v = 0$$

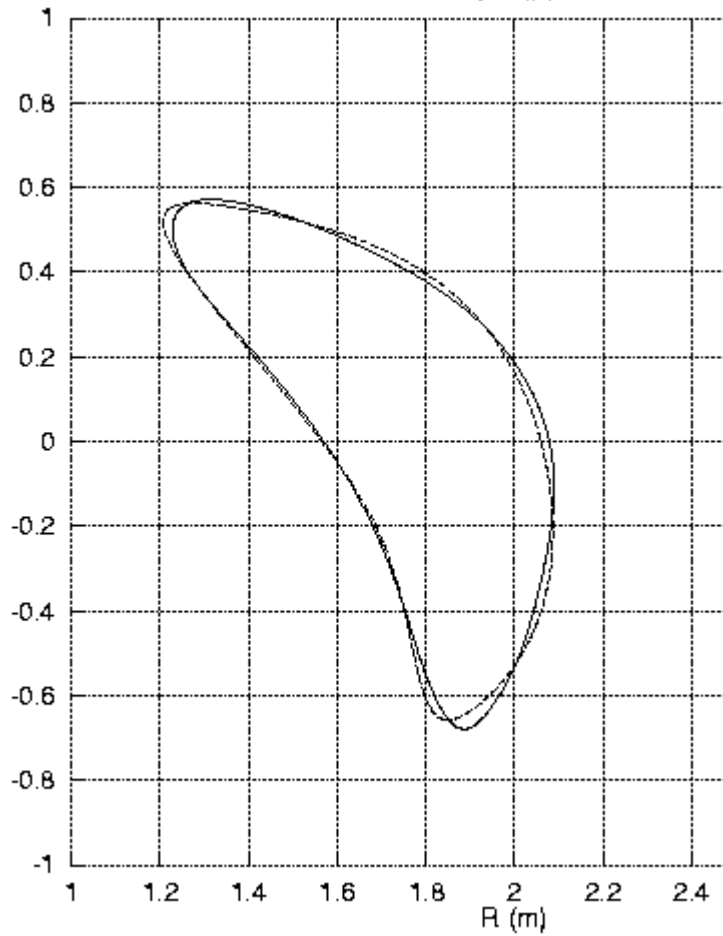


	Free	(Fixed)
$A =$	4.38	(4.37)
$R =$	1.74m	(1.73m)
$\iota(0) =$	0.39	(0.39)
$\iota(1) =$	0.65	(0.65)
$\beta =$	4.23%	(4.25%)

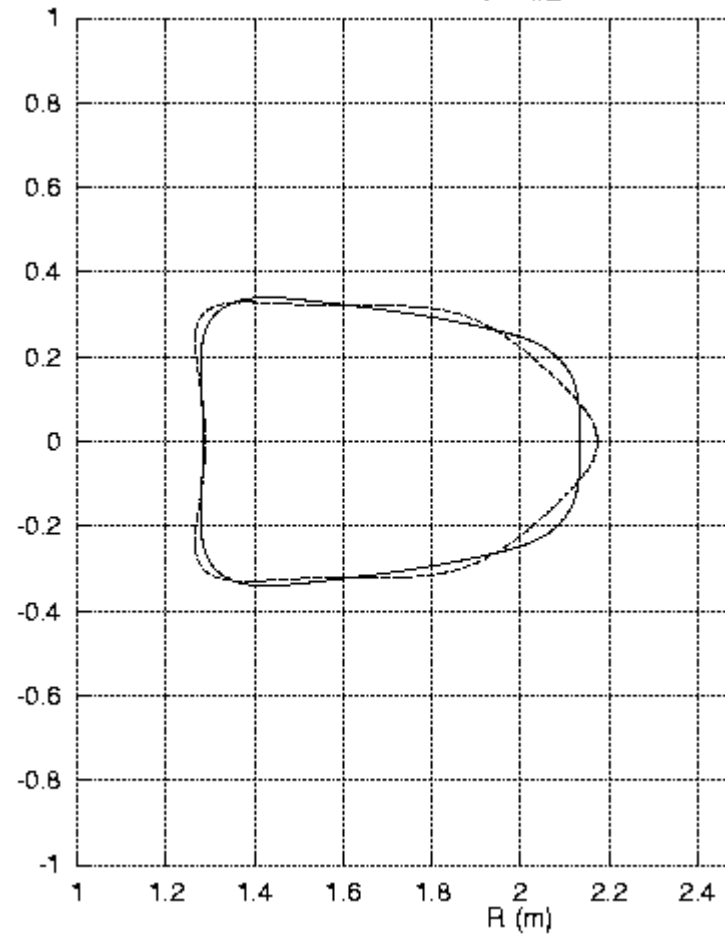
# Free-boundary Reconstruction of LI383

Modular Coil Solution 1005b8 –  $N_c=6$

$\nu = 1/4$

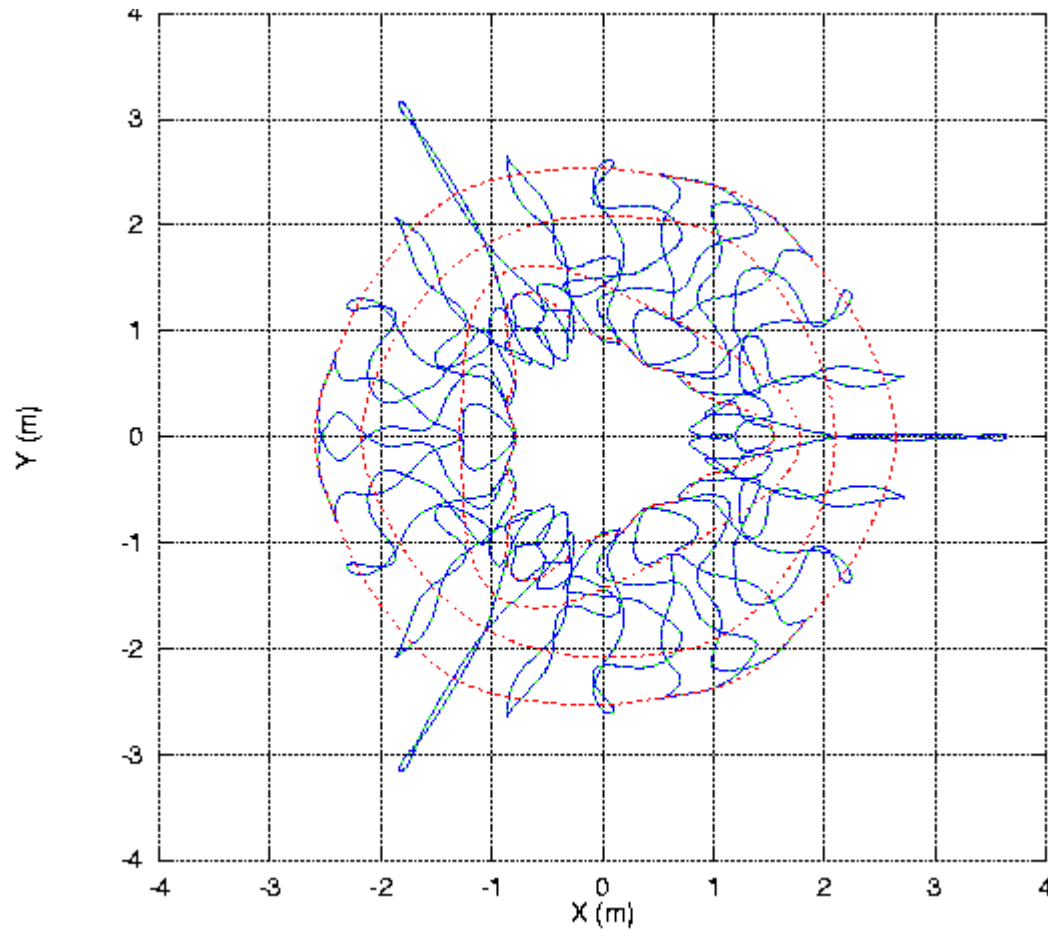


$\nu = 1/2$



# Modular Coils for LI383

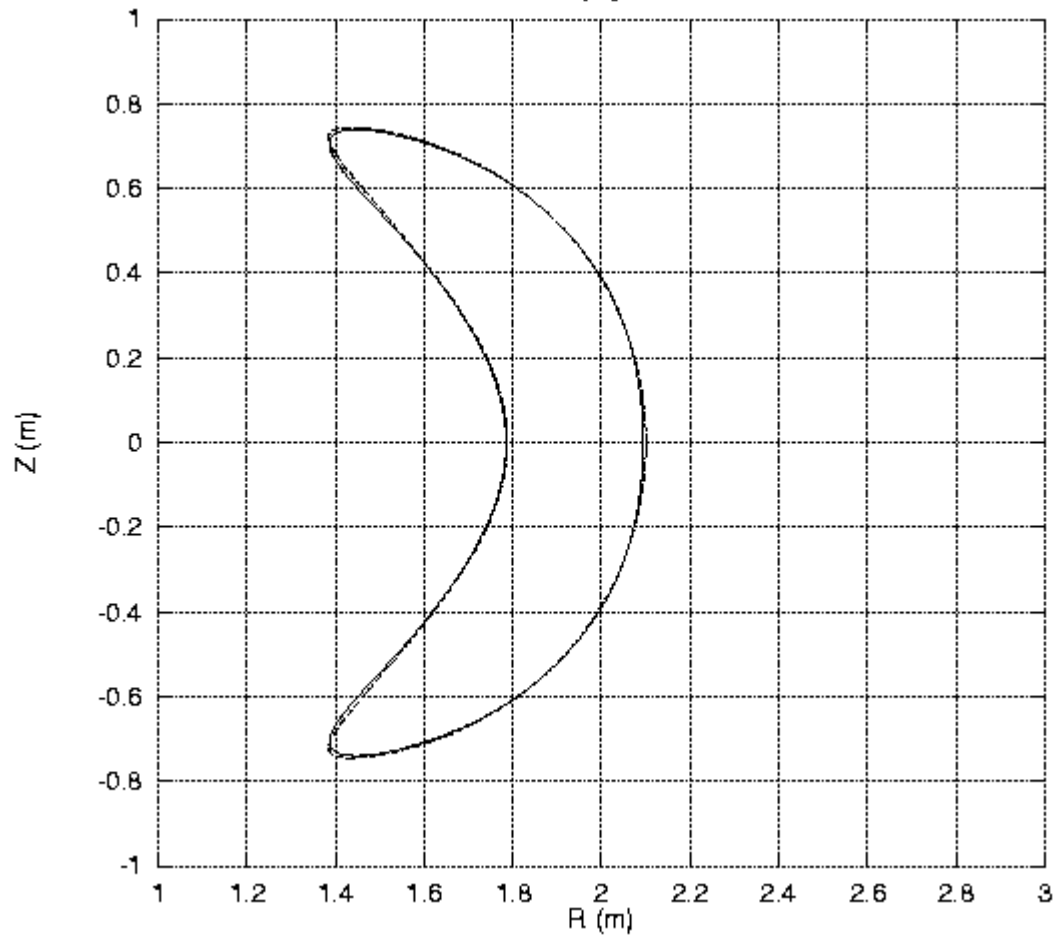
Solution 1009a1 –  $N_c=7$



# Free-boundary Reconstruction of LI383

Modular Coil Solution 1009a1 –  $N_c=7$

$$v = 0$$

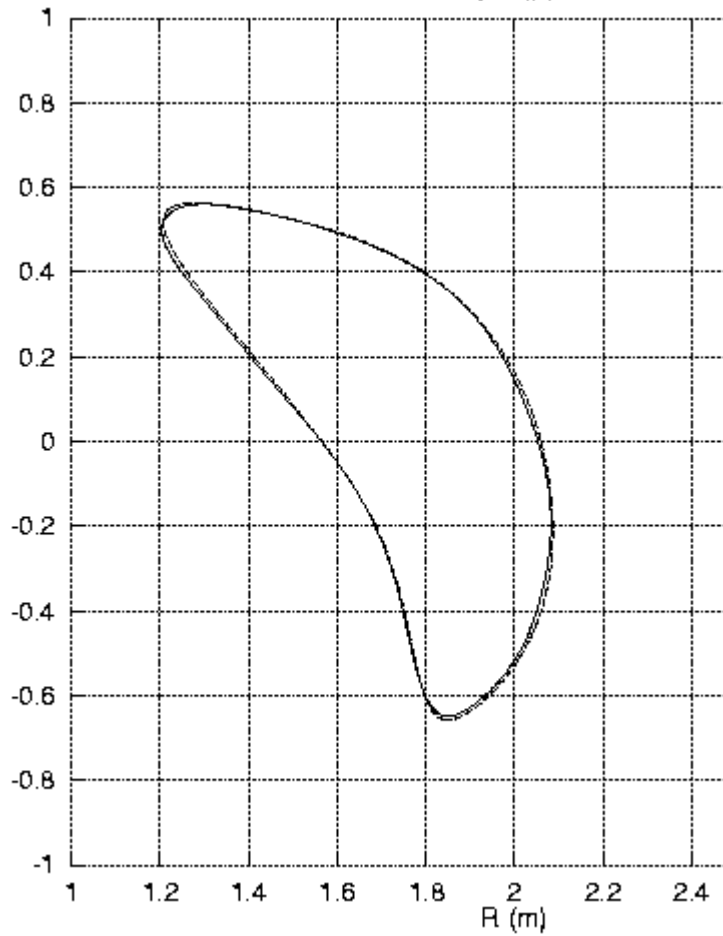


	Free	(Fixed)
$A =$	4.36	(4.37)
$R =$	1.73m	(1.73m)
$\iota(0) =$	0.41	(0.39)
$\iota(1) =$	0.65	(0.65)
$\beta =$	4.21%	(4.25%)

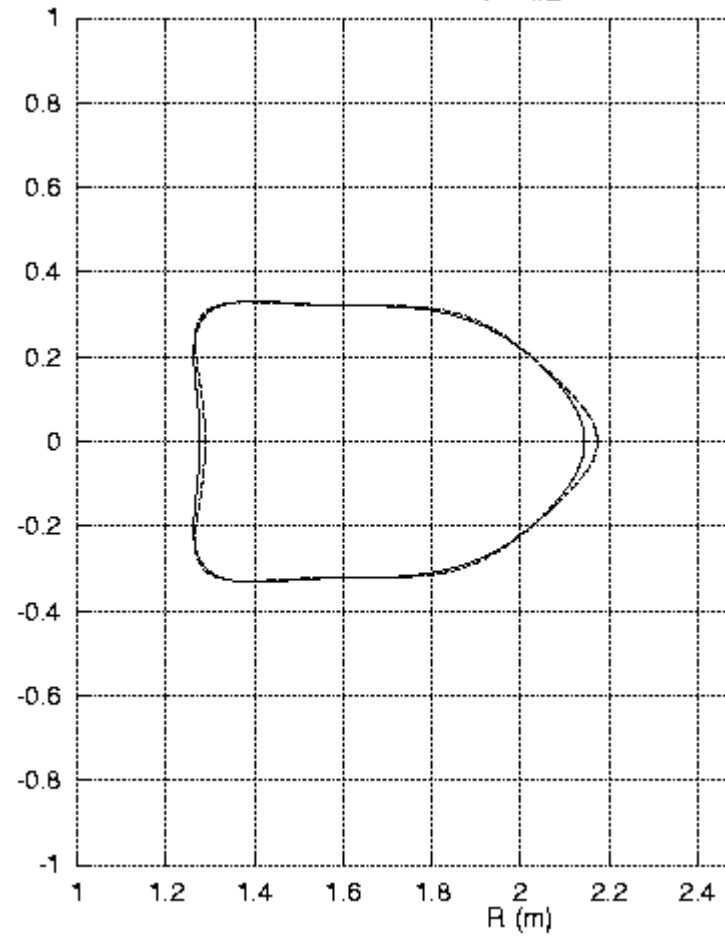
# Free-boundary Reconstruction of LI383

Modular Coil Solution 1009a1 –  $N_c=7$

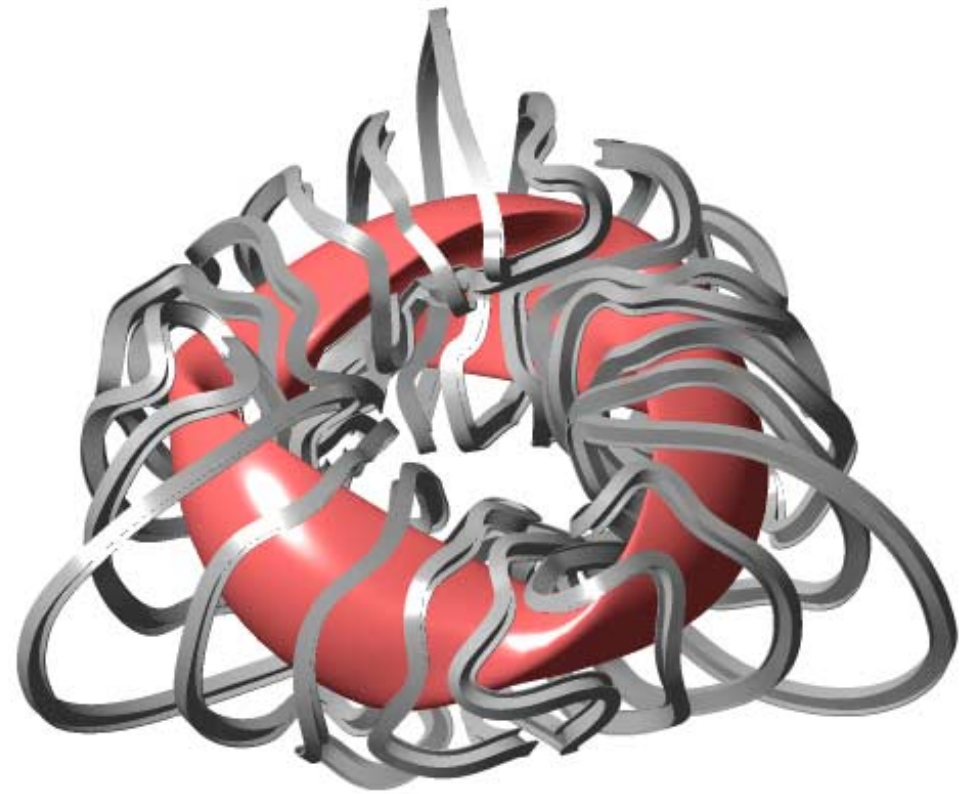
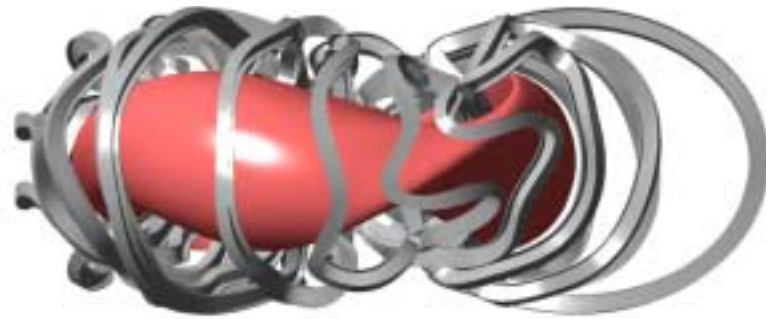
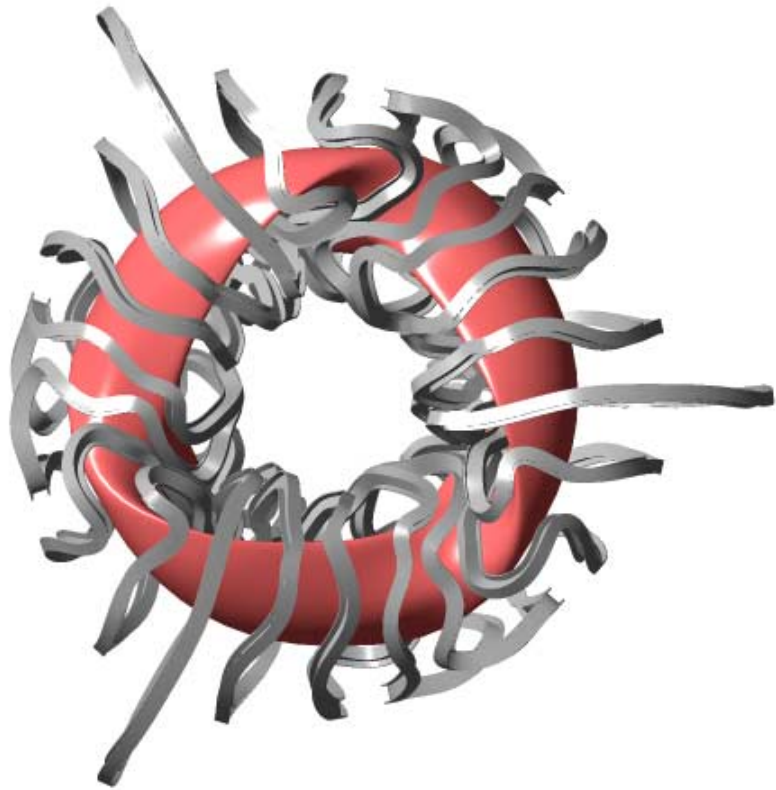
$\nu = 1/4$



$\nu = 1/2$







D. Williamson