milonga's 2D LWR IAEA Benchmark Problem case #058
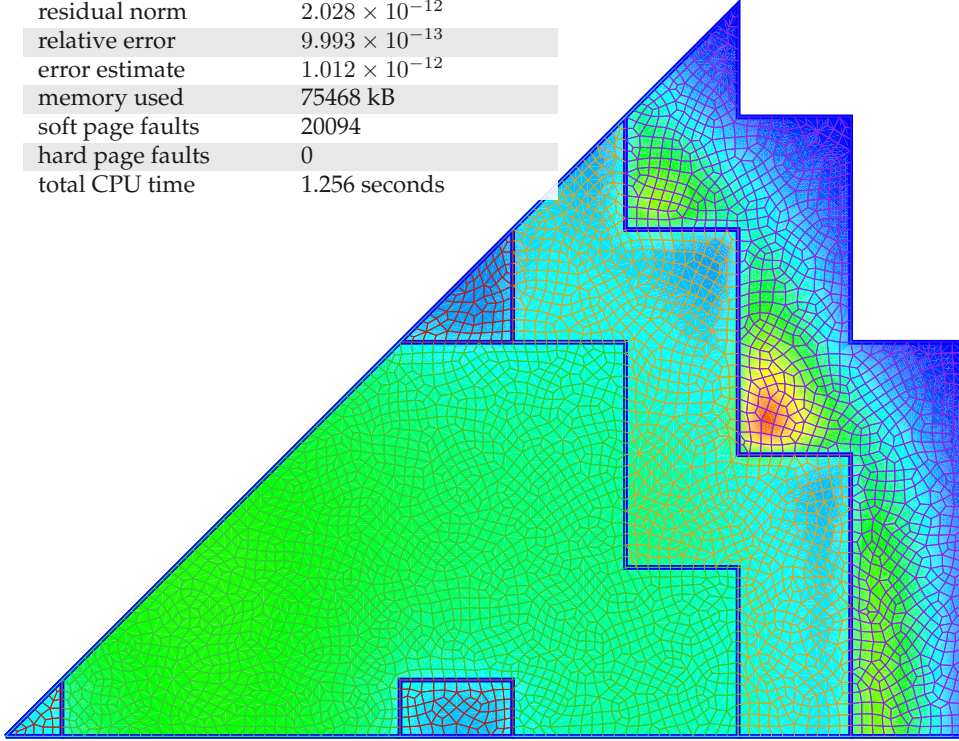
eighth-symmetry core meshed using delaunay (quads, $\ell_c = 2$) solved with finite elements
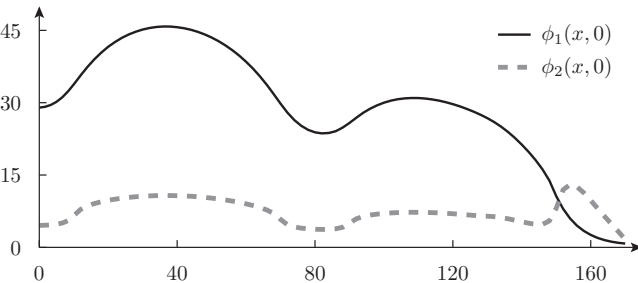
largest eigenvalue k_{eff}	1.029695 (2883.87 pcm)
max $\phi_2(x, y)$@core	11.08 @ (30.45, 30.45)
max $\phi_2(x, y)$@reflector	8.33 @ (130.00, 50.00)
number of unknowns	8234
outer iterations	3
linear iterations	32
inner iterations	1029
residual norm	2.028×10^{-12}
relative error	9.993×10^{-13}
error estimate	1.012×10^{-12}
memory used	75468 kB
soft page faults	20094
hard page faults	0
total CPU time	1.256 seconds

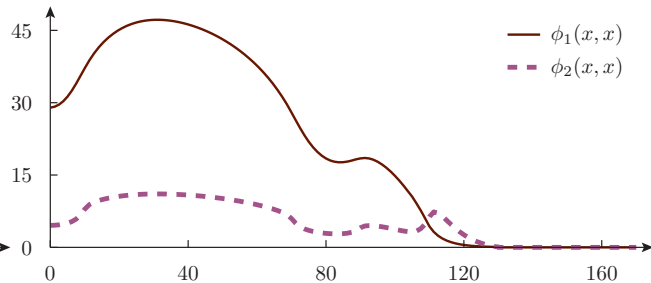| k	P_k	ϕ_{1k}	ϕ_{2k}
1	0.74	32.07	5.47
2	1.29	41.36	9.57
3	1.44	45.34	10.64
4	1.20	38.28	8.87
5	0.61	26.38	4.50
6	0.93	29.85	6.90
7	0.94	29.48	6.94
8	0.72	20.53	5.66
9	—	3.57	8.59
10	1.42	44.78	10.50
11	1.46	46.17	10.84
12	1.30	41.11	9.64
13	1.06	33.96	7.86
14	1.03	32.63	7.65
15	0.95	29.91	7.06
16	0.71	20.05	5.52
17	—	3.40	8.16
18	1.45	45.88	10.77
19	1.33	42.06	9.87
20	1.17	36.98	8.68
21	1.07	33.62	7.91
22	0.98	29.18	7.25
23	0.62	16.86	5.20
24	—	2.58	6.29
25	1.18	37.37	8.76
26	0.96	30.73	7.12
27	0.91	28.48	6.71
28	0.80	22.72	6.31
29	—	6.09	12.72
30	—	0.80	3.17
31	0.47	20.35	3.48
32	0.69	20.81	5.09
33	0.54	14.58	4.48
34	—	2.55	6.46
35	0.52	14.13	4.37
36	—	4.09	8.51
37	—	0.64	2.51
38	—	0.71	2.84

(a) Mesh and thermal flux distribution

(b) Power and fluxes

(c) Flux distribution $\phi_g(x, 0)$ along the x axis

(d) Flux distribution $\phi_g(x, x)$ along the diagonal