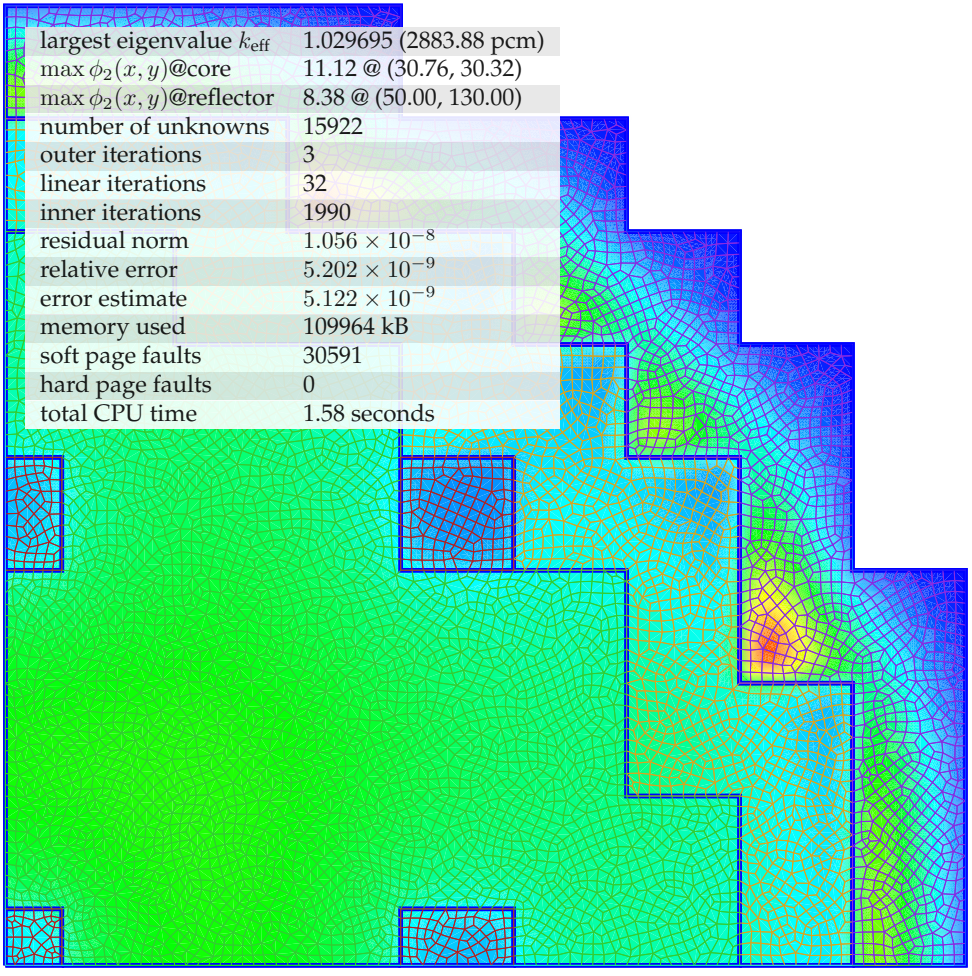
milonga's 2D LWR IAEA Benchmark Problem case #018

quarter-symmetry core meshed using delaunay (quads, ℓ_c =2) solved with finite elements

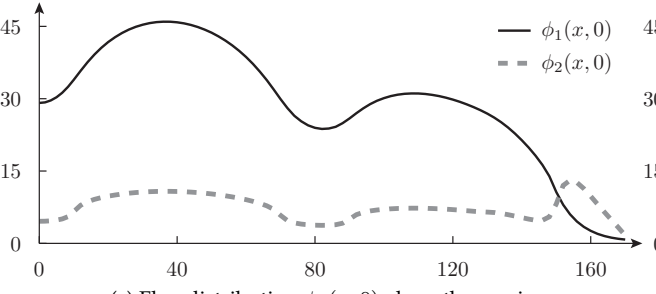


largest eigenvalue k_{eff}	1.029695 (2883.88 pcm)
$\max \phi_2(x,y)$@core	11.12 @ (30.76, 30.32)
$\max \phi_2(x,y)$@reflector	8.38 @ (50.00, 130.00)
number of unknowns	15922
outer iterations	3
linear iterations	32
inner iterations	1990
residual norm	1.056×10^{-8}
relative error	5.202×10^{-9}
error estimate	5.122×10^{-9}
memory used	109964 kB
soft page faults	30591
hard page faults	0
total CPU time	1.58 seconds

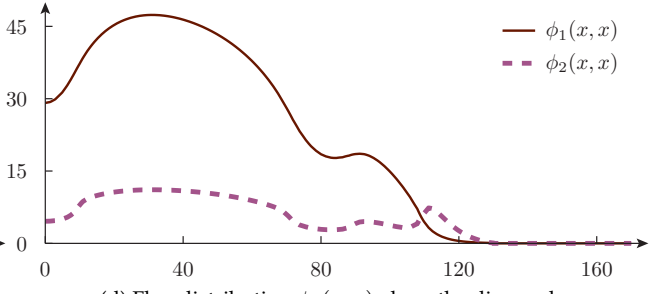
(a) Mesh and thermal flux distribution

k	P_k	ϕ_{1k}	ϕ_{2k}
1	0.74	32.20	5.49
2	1.30	41.52	9.61
3	1.44	45.51	10.68
4	1.20	38.43	8.90
5	0.61	26.48	4.52
6	0.94	29.96	6.93
7	0.94	29.59	6.96
8	0.72	20.61	5.69
9	—	3.58	8.62
10	1.42	44.95	10.54
11	1.47	46.34	10.88
12	1.31	41.27	9.68
13	1.07	34.09	7.89
14	1.04	32.75	7.68
15	0.96	30.03	7.08
16	0.71	20.14	5.54
17	—	3.42	8.20
18	1.46	46.06	10.81
19	1.34	42.22	9.91
20	1.18	37.11	8.71
21	1.07	33.75	7.94
22	0.98	29.29	7.27
23	0.62	16.92	5.22
24	—	2.58	6.32
25	1.19	37.52	8.80
26	0.96	30.84	7.15
27	0.91	28.58	6.73
28	0.80	22.80	6.33
29	—	6.11	12.77
30	—	0.80	3.18
31	0.47	20.43	3.50
32	0.69	20.88	5.10
33	0.54	14.63	4.50
34	—	2.55	6.48
35	0.51	14.18	4.39
36	—	4.10	8.54
37	—	0.64	2.52
38	—	0.71	2.85

(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