

- ϵ is maximum value for L^∞ error
- Best tested ϵ used to reach convergence for each test
- Including new nodes as average of surrounding values or as big value does not effect results
- Locking unrefined nodes in AMR moderately increases L^1 error, but reduces computation time
- All elements associated with refinement node are refined
- Each element divided into 4 triangles when refined (conformal adaptation)
- First order sweeping from Qian, Zhang, and Zhao (2007)

Two-circle problem

Nodes	Elements	L^1 error	L^∞ error	CPU (sec)
64	104	1.85×10^{-1}	6.73×10^{-1}	0.13
233	416	1.02×10^{-1}	7.24×10^{-1}	0.81
881	1664	2.71×10^{-2}	1.27×10^{-1}	3.32
3425	6656	6.51×10^{-3}	2.86×10^{-2}	19.51
13505	26624	2.45×10^{-3}	1.41×10^{-2}	102.41
53633	106496	1.20×10^{-3}	8.46×10^{-3}	744.63

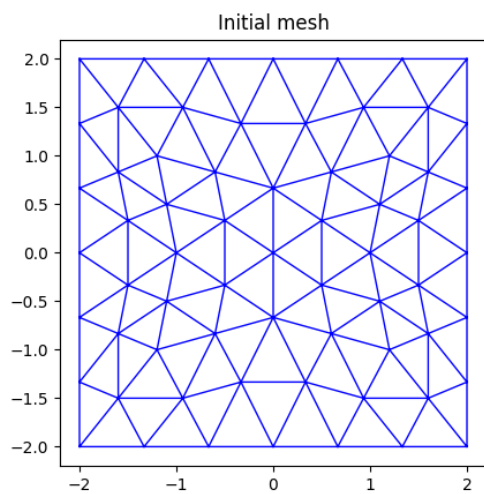
Table 1: Acute triangulation, spherical wave sweeping based on l^2 -metric ordering, 4 corners as reference, both ascent and descent orderings

Initial nodes	Initial elements	Final nodes	Final elements	ϵ	L^1 error	L^∞ error	CPU (sec)
64	104	1986	3840	3.6×10^{-2}	1.21×10^{-2}	3.49×10^{-2}	13.59
233	416	1986	3840	3.6×10^{-2}	1.21×10^{-2}	3.49×10^{-2}	13.00
881	1664	2178	4220	3.6×10^{-2}	1.15×10^{-2}	3.52×10^{-2}	13.40
3425	6656	3543	6892	2.2×10^{-2}	6.23×10^{-3}	2.18×10^{-2}	21.47

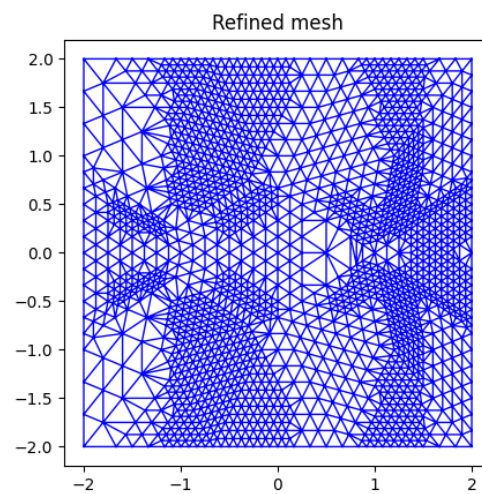
Table 2: Acute initial triangulation, one iteration of obtuse treatment, AMR, locking old nodes, averaging new nodes, spherical wave sweeping based on l^2 -metric ordering, 4 corners as reference, both ascent and descent orderings

Initial nodes	Initial elements	Final nodes	Final elements	ϵ	L^1 error	L^∞ error	CPU (sec)
64	104	1840	3558	3.9×10^{-2}	7.75×10^{-3}	3.52×10^{-2}	14.14
233	416	1846	3570	3.9×10^{-2}	7.75×10^{-3}	3.52×10^{-2}	13.51
881	1664	2166	4196	3.6×10^{-2}	7.66×10^{-3}	3.46×10^{-2}	19.83
3425	6656	3543	6892	2.2×10^{-2}	5.82×10^{-3}	2.17×10^{-2}	36.82

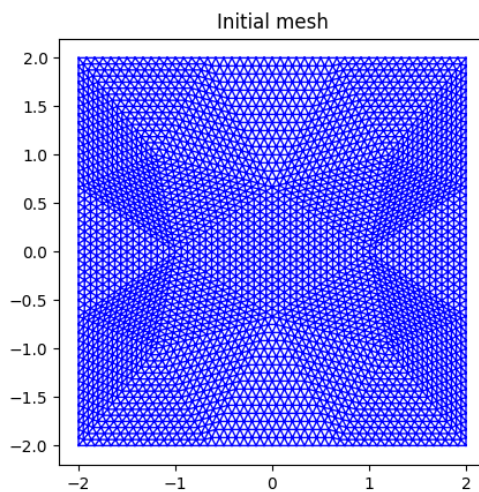
Table 3: Acute initial triangulation, one iteration of obtuse treatment, AMR, averaging new nodes, spherical wave sweeping based on l^2 -metric ordering, 4 corners as reference, both ascent and descent orderings



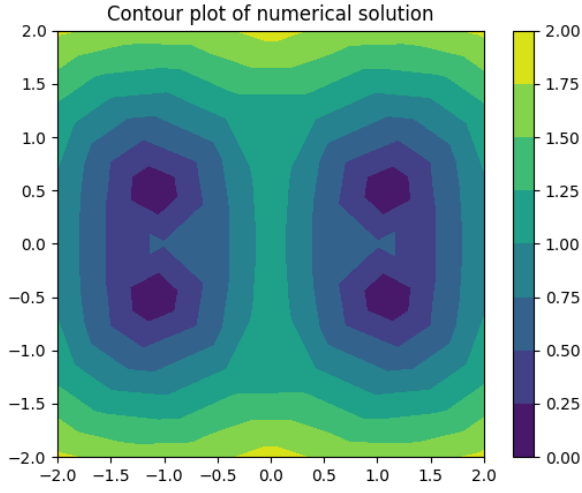
(a) Acute triangulation, 64 nodes, 104 elements



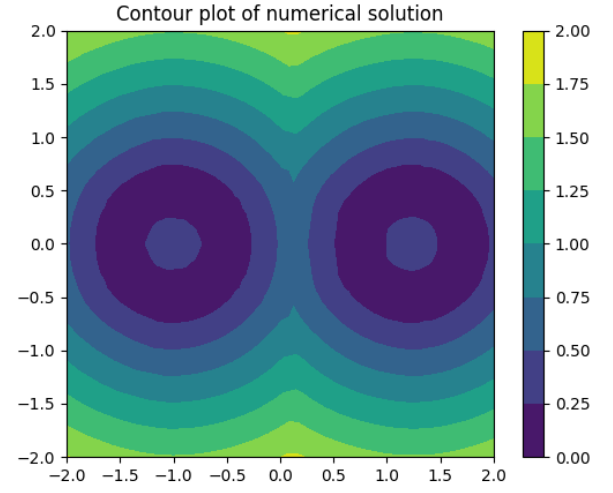
(b) Adaptively refined mesh, 1840 nodes, 3558 elements



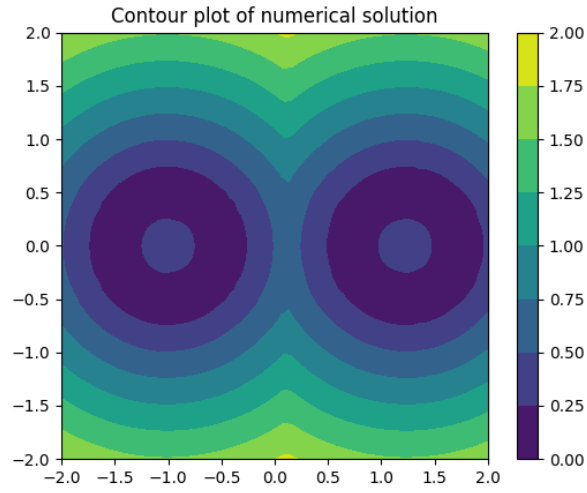
(c) Acute triangulation, 3425 nodes, 6656 elements



(a) Standard solution, 64 nodes, 104 elements



(b) AMR solution, 1840 nodes, 3558 elements, no locking



(c) Standard solution, 3425 nodes, 6656 elements