1 L^2 Error

Table 1: Test Parameters

Parameter	Value
D	1
σ_a	0.1
q	5
width	5

Table 2: Test Results

Left Right	Neumann 0 Neumann 0	Robin 0 Robin 0	Dirichlet 0 Dirichlet 0	Dirichlet 5 Dirichlet 2	Robin 0 Dirichlet 2	Neumann 3 Neumann 3	Neumann 2 Robin 5
1	0.000E+00	3.927E+01	1.761E+02	1.011E+02	2.078E+01	6.456E-04	2.091E+02
2	1.262E-28	6.823E+01	1.442E+02	1.189E+02	1.017E+02	1.050E+01	5.789E+01
5	6.286E-27	1.340E+01	2.707E+01	2.322E+01	2.179E+01	2.205E+00	9.984E+00
10	1.371E-25	3.437E+00	6.910E+00	5.989E+00	5.770E+00	5.707E-01	2.550E+00
20	1.589E-23	8.649E-01	1.736E+00	1.513E+00	1.476E+00	1.439E-01	6.436E-01
50	2.759E-22	1.386E-01	2.782E-01	2.432E-01	2.391E-01	2.308E-02	1.035E-01
100	4.482E-21	3.467E-02	6.957E-02	6.086E-02	5.999E-02	5.771E-03	2.593E-02
200	4.098E-21	8.667E-03	1.739E-02	1.522E-02	1.503E-02	1.443E-03	6.488E-03
500	4.670E-20	1.387E-03	2.783E-03	2.437E-03	2.407E-03	2.309E-04	1.039E-03
1000	7.140E-18	3.467E-04	6.957E-04	6.092E-04	6.019E-04	5.772E-05	2.597E-04
2000	3.251E-16	8.667E-05	1.739E-04	1.523E-04	1.505E-04	1.443E-05	6.493E-05
5000	1.174E-17	1.387E-05	2.783E-05	2.437E-05	2.408E-05	2.309E-06	1.039E-05
10000	5.748E-14	3.467E-06	6.957E-06	6.093E-06	6.021E-06	5.772E-07	2.597E-06

The 0-0 Neumann case is unstable, its shape varies widely depending on number of nodes. But it is better behaved for the non-zero neumann case.

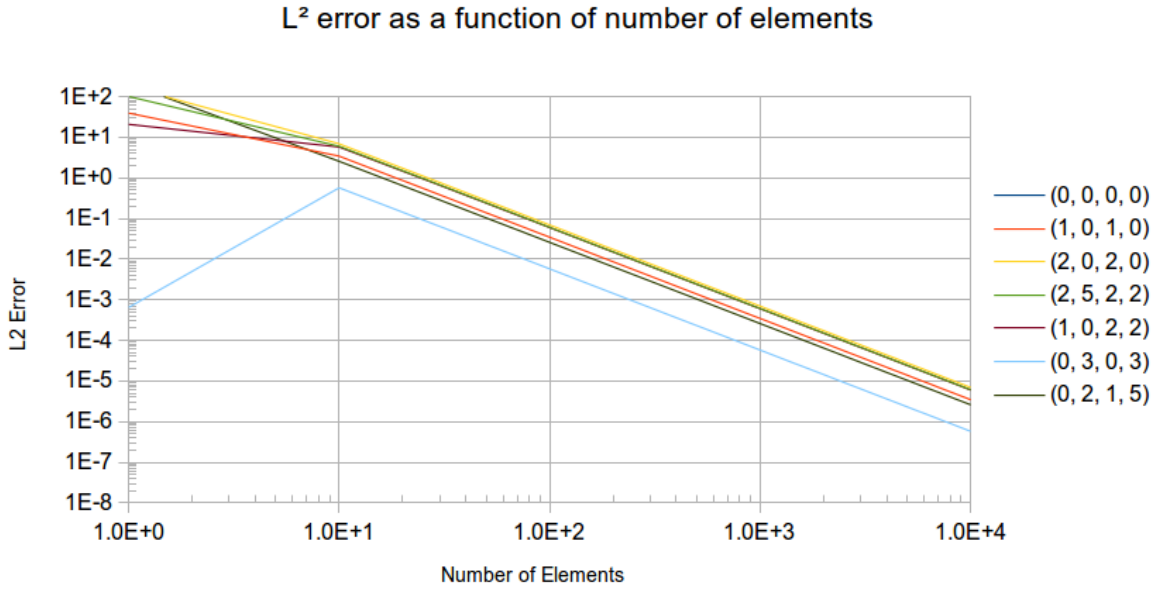

Figure 1: L² error. Plotted using node counts 1, 10–100 (increments of 10), and 500–10000 (increments of 500). The 0-0 Neumann case has been cropped out to show the other cases better.