Parameter study for the as-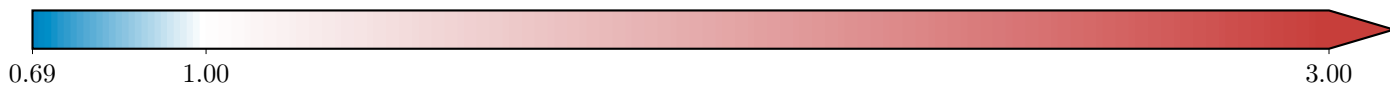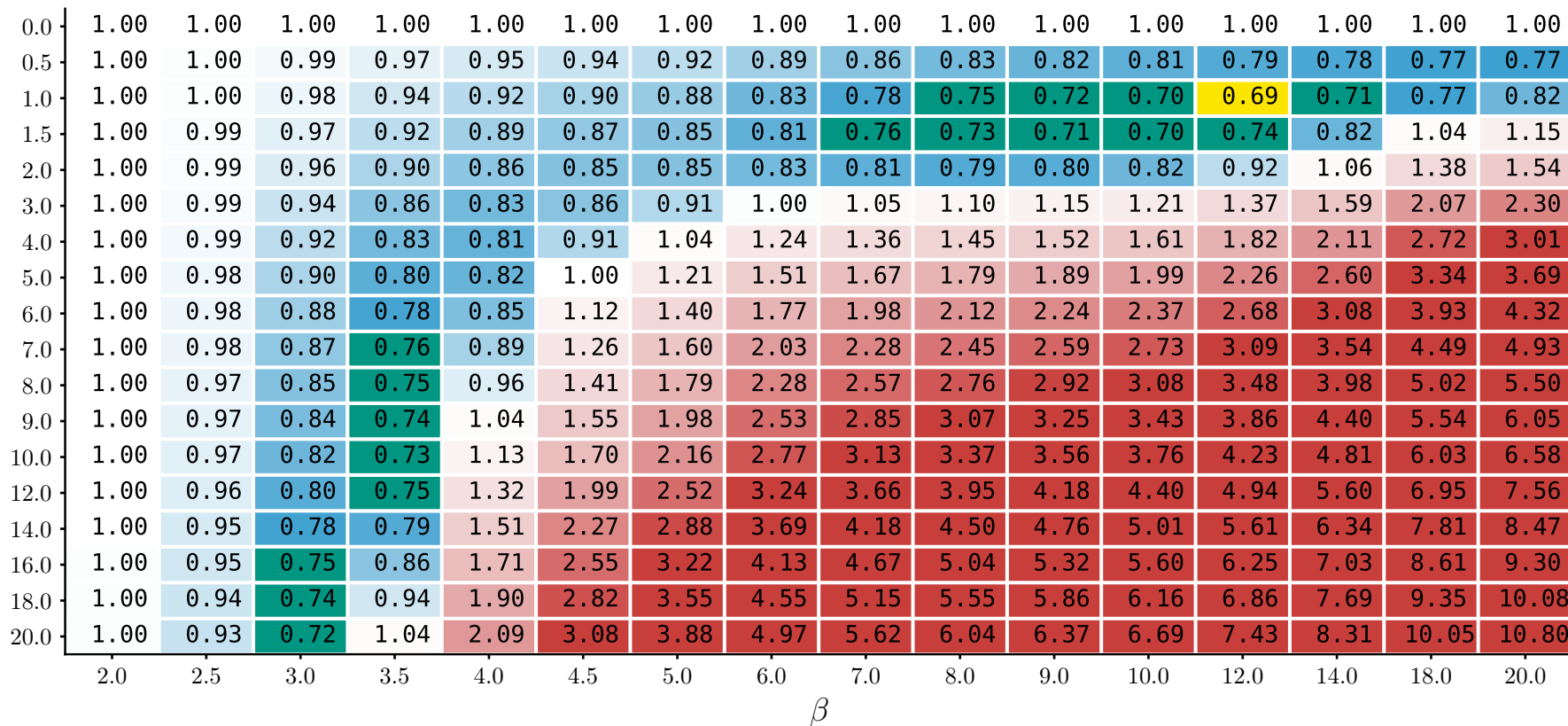S_N method and the line-source test case ($n_x = n_y = 280$ and $n_q = 92$)