EXTRAPOLATED SURFACE CHARGE METHOD FOR CAPACITY CALCULATION OF POLYGONS AND POLYHEDRA. E Goto, *Faculty of Science, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113 Japan*; *The Institute of Physical and Chemical Research, 2-1 Hirosawa, Wako-shi, Saitama, 351-01 Japan*; *Quantum Magneto-Flux Logic Project, Research Development Corporation of Japan, 2-1-42 Ikenohata, Taito-ku, Tokyo, 110 Japan*; Y. Shi, *Faculty of Science, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113 Japan*; N. Yoshida, *Faculty of Science, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113 Japan*; *The Institute of Physical and Chemical Research, 2-1 Hirosawa, Wako-shi, Saitama, 351-01 Japan.*

Effectiveness of extrapolation in calculating the electric capacities of polygons and polyhedra by SCM (surface charge method) is represented. In the case of a square, it is divided into n^2 small squares as treated by Maxwell ($n=6$). Empirically, extrapolation function of the form $\alpha_1/n+\alpha_2/n^2+\beta_1(\log n)/n+\beta_2(\log n)/n^2$ is found to give the best result with the accuracy of more than six decimal figures at $n=28$. In conventional methods without extrapolation, forbiddingly large $n=10^5$ should be needed to obtain the same accuracy. Extrapolation without logarithmic terms ($\beta_1-\beta_2-0$) does not work well. Thus, extrapolation using a logarithmic series and successive refinement leads to both accurate solutions and a saving in computational time. The origin of logarithmic terms is studied. The result of a numerical experiment suggests that logarithmic terms are needed when there are sharp edges in the configuration.

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