
Index

- airplane window, 15
 amplitwist, 107
 analytic continuation, 2, 5, 10, 105, 112–113
 approximation theory, xvi, 108–111, 114
 automatic control, 76
- beta function, incomplete, 18
 boundary correspondence, 74, 108
 branch cut, 2, 12, 46, 78
 Brownian motion, 97–99
- capacitance, electrical, 76
 capacity, 53, 108, 112
 Carathéodory–Osgood theorem, 1
 Cauchy–Riemann equations, 107
 Chebyshev polynomial, 110
 Christoffel, Elwin Bruno, 4–6
 circular-arc polygon, *see* SC mapping
 circular triangle, 72
 computers, 4, 6, 23
 conformal
 center, 12, 77
 modulus of quadrilateral, 20, 39, 47–51, 99–101
 modulus of doubly connected polygon, 64, 69, 70
 CONFPACK, 39
 crack detection, 76, 100–101
 CRDT algorithm, xvi, 8, 30–39
 cross-ratio, 21, 31
 crowding, xvi, 7, 20–21, 23, 25, 28, 30–31, 43, 44, 45, 47, 72, 78
 curved boundary, *see* SC mapping
- Delaunay triangulation, xvi, 32
 Delaware, 26
 digital filter, xvi, 112, 114
 domain decomposition, 21, 30–36
 doubly connected polygon, *see* SC mapping
- drum, can one hear shape of?, xv
 DSCPACK, 8, 39, 69–70
- electrical engineering, 76
 elliptic integral, 18–20, 48–51, 111
 elongated region, xv, 7, 21, 30
 embedding, 30
 extended complex plane, 9, 51, 108
 exterior map, *see* SC mapping
- Faber polynomial, 108–111
 finite elements, xvi, 28
 floating-point arithmetic, 21, 30
 fluid mechanics, 57, 76, 101–105
 fractal, *see* SC mapping
 free-streamline flow, 7, 101–106
- gearlike domain, *see* SC mapping
 graphics, xv, xvi, 5, 6, 116
 Green’s function, xvi, 5, 77, 111–114
- harmonic
 function, 87
 measure, 114
 Hall effect, 76, 94, 97
 Henrici, Peter, xv, xvi
 hodograph variable, 102
 hypergeometric function, 72
- infinite vertex, *see* vertex at infinity
 integral equation, 28, 74, 76
 integrated circuit, 76
 integration, *see* quadrature
 inverse
 of SC map, 4, 29–30
 problem, 99–101
- jet, 76, 105
 Jordan region, 19, 60

Korteweg–de Vries equation, 87
 Krylov subspace method, 111
 Kufarev's method, 7, 8

Laplace equation, 75–99
 Laplacian, 107
 lightning, 15

MATLAB, xv, xvi, 39, 115–119
 matrix iteration, xvi, 108–111
 maze, 36–38
 mesh
 generation, 37–39, 76–77, 105–108
 refinement, xvi, 28
 microwave waveguide, 76
 Möbius transformation, xvi, 12, 19, 31–33, 42, 58–59, 60, 65, 71, 72, 103
 multiply connected polygon, *see* SC mapping

Netlib, 39, 72, 105

oblique derivative problem, xv, 87–99
 one-half rule, *see* quadrature

parameter problem, 4, 5, 23–27, 116
 generalized, 7, 99–101, 112, 114
 linear, 85–87, 94
 polygon, 1, 3, 9–10
 porthole, 15
 prevertices, 1–4, 23–27

quadrature, 4, 7, 27–29, 116
 compound Gauss–Jacobi, 28–29
 Gauss–Jacobi, 28, 105
 Gauss–Legendre, 105
 Newton–Cotes, 28
 one-half rule for, xvi, 28
 quadrilateral, 5, 32
 generalized, 19, 48, 99

rectangle, *see* SC mapping
 reentrant corner, 15
 reflection, *see* Schwarz reflection
 resistance, electrical, 47, 76, 99–101, *see also*
 conformal modulus of quadrilateral
 resistor trimming, 76, 99–101
 Riemann
 mapping theorem, 4, 6, 12, 108

 sphere, 9, 108
 surface, *see* SC mapping
 Rouché's theorem, 110
 roundoff error, *see* floating-point arithmetic

salient corner, 15
 SC mapping
 of circular-arc polygon, xvi, 3, 5, 7, 26, 39, 70–73
 of curved boundary region, 5, 7, 26, 73–74
 of disk, 3, 11–12, 42–44, 115
 of doubly connected polygon, xvi, 3, 7, 8, 39, 64–70
 of exterior of polygon, 3, 5, 51–54, 115
 of fractal, 55–57
 of gearlike region, 7, 39, 60–63, 115
 of half-plane, 3, 10–20, 115
 of infinite strip, 7, 12–15, 30, 44–48
 of periodic polygon, 7, 55–57, 58
 of rectangle, 18–21, 47–51
 of Riemann surface, 58–61, 80, 86–87, 115
 of symmetric multiply connected polygon, 111–114
 of triangle, 5, 16–18
 SC Toolbox, xv, xvi, 6, 8, 29, 39, 115–119
 Schwarz
 Hermann Amandus, 4–6
 reflection, 2, 10, 13, 57–58, 65–68, 70, 112–113
 Schwarz–Christoffel, *see* SC
 Schwarzian, 71, 73
 SCPACK, xv, 6, 7, 39, 111
 slit, 1, 3, 9, 14–15, 17, 26–27, 30, 45, 69, 83–87
 software, 6, 7, 23, 39–40, 115–119
 strip, *see* SC mapping

T_EX, xv
 theta function, 66, 69
 transfinite diameter, *see* capacity
 triangle, *see* SC mapping
 turning angle, 2

Van der Pauw resistor, 76, 87
 vertex at infinity, 3, 9, 10, 25, 29

wakes and cavities, 76, 101–106
 well-separated prevertices, 33