

Index

- Bäcklund transformation, 113–138, 141–144,
 177–182, 201–217, 223–234, 237
 Bianchi permutability, 113, 124, 134
 Bianchi–Bäcklund transformation, 181
- Calapso transformation, 152–153
 canonical complex structure, 22
 central sphere congruence, 31–38, 40
 Codazzi equation, 43–44, 90
 complexified surface, 96–98
 conformal n -sphere, 16, 21
 conformal coordinates, 24
 conformal Gauss map, 31, 34, 38
 conformal immersion, 17
 conformal invariance, 17
 conformal manifold, 17
 conformal structure, 17
 conformally equivalent metrics, 17
 conserved quantity, 135–139, 141–144, 161
 constant mean curvature surface, 11–15, 138,
 157–182
 constrained harmonicity, 87, 89–93
 curvature line coordinates, 148–151, 178, 236
- Darboux transformation, 145–147, 154–155,
 181–183, 201, 217, 220, 223, 226–227,
 234
 Dirichlet energy, 57–58
- elastic bending energy, 50
 Euler–Lagrange equation, 7, 59, 65, 76, 157
- Gauss equation, 33
 Gauss map, 182
 Gauss–Bonnet theorem, 55
- Gauss–Ricci equation, 43–44, 90
 Gaussian curvature, 1, 33
- harmonic map, 59, 70, 182
 harmonicity, 58–60, 69, 72
 Hessian, 35, 59
 Hopf differential, 75, 85, 104–105, 150, 154,
 166–167, 174–175, 235
- infinitesimally conformal variation, 74
 isothermic surface, 6–10, 13, 147–157, 160,
 181–182, 235
- Lagrange multiplier, 73, 77
 light cone, 18
- Möbius geometry, 17
 Möbius invariance, 17
 Möbius transformation, 17
 mean curvature, 1, 32, 55, 160
 mean curvature sphere congruence, 31, 190
 mean curvature vector, 31, 55
 metric, 17
 minimal surface, 6–13, 56–57, 157–160,
 164–165, 168, 170, 175–178
 Minkowski space, 18
- osculating circle, 1
 osculating sphere, 31, 36
- perturbed harmonicity, 89
 principal curvatures, 1, 32
 principal directions, 32
 projectivized light cone, 18, 21

246

Index

- Schwarzian derivative, 75, 85, 104–105, 154, 167, 174
second fundamental form, 31–32
sectional curvature, 18
shape operator, 32
space-form, 18
spectral deformation, 69–72, 94–96, 102–105, 132–134, 142, 152–154, 168–177, 181
trace-free part of the second fundamental form, 51
umbilic point, 32, 175
Willmore energy, 50–55
Willmore functional, 51, 55
Willmore surface, 3–10, 49–72, 128, 157–159, 164, 170, 183, 201, 217