INDEX

2D elastic 3, 146
2D FLOTRAN 141, 217

A
Acoustic problems, 37
Adiabatic, 231
Animate, 211
Anisotropic, 46
Apply PRES, 228
Apply VELO load, 227
Arbitrary path, 328
Area, 110, 111, 112, 114, 121, 122, 123, 124, 125
  add —s, 80
  display — number, 84
  subtract —, 82, 83
  subtract the elliptic —, 97
Area moment of inertia of the cross section, 53
Arm, 332, 338

B
Beam, 146
BEAM3, 147
Bending stress, 74
Body force, 16, 21, 25, 26, 31
Boolean operation, 80, 82, 94, 287, 360, 385
Booleans, 175
Boundary conditions, 276
Brick 8node, 189
Butterfly valve, 242

C
Cantilever beam, 144
Cauchy relation, 20
Center-cracked tension plate, 106, 107, 110, 114, 115, 116, 118
Command files, 38
Conduction, 264
Conductivity, 289
Constitutive relation, 17, 25
Constraint condition
  apply —, 99, 113, 133
  clear —, 66
  delete the —, 66
  definition of —, 63
  imposing of —, 65, 88, 99, 113, 133
Constraints, 49
Contact, 345, 346
  manager, 345, 346, 372
  pair, 370, 398, 405
  pick, 373, 398
  pressure, 355, 358, 384, 411
  properties, 376
  wizard, 345, 346, 370, 372
Contact stress (see also Hertz contact stress), 51, 120, 121, 123, 125, 127, 129, 131, 133, 135, 136, 137, 138, 139, 140
Contour plot, 355, 381, 408
Convection, 264
  coefficient, 286
  film, 290
Convective lines, 276
Convergence criteria, 439
Coordinate system, 306
  Cartesian, 444
  polar, 444
Coupled field loads, 49
Crack, 27, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 142
Create, 317
  block, 334
  component, 431, 433
  cylinder, 335, 362, 363
  elements, 437
  nodes, 429
  rectangle, 317, 386
Create Area thru KPs, 171
Current LS, 159
Cylindrical coordinates, 305

D
Database, 41
Define Loads, 154
Define Path, 237
Deformed Shape, 161, 442

Delete volume, 296, 362
Density, 149
Differential equation, 1, 2, 3, 5, 6, 14, 15, 19, 21
Diffuser, 216
DOF, 49

E
Edge option, 309
Effective stress, 79
Eight-node isoparametric element, 57, 59, 86, 98, 110, 123, 124
Elastic 8node, 165
Electromagnetic problems, 37
Element, 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 35, 37, 51, 52, 53, 57, 58, 59, 60, 61, 62, 74, 76, 77, 78, 79, 84, 86, 87, 88, 93, 98, 99, 107, 110, 111, 112, 113, 123, 124, 125, 130131 132 133 134 135 136
  attributes, 46, 429, 435, 436
  edges, 371
  size, 60, 61, 77, 78, 79, 87, 98, 111, 124, 125, 342, 395, 427
  surface, 357
  type, 37, 44, 340, 365
Element matrix, 12, 13
Element stiffness matrix, 15, 26, 27, 28, 30, 31
Entities, 303, 350, 356
Equations of equilibrium, 16, 18, 19, 21, 25
Equivalent nodal force, 25, 26, 31
Equivalent stress, 81
Extrude, 201
Extrude area, 320, 389, 390

F
Finite difference method, 1
Finite element, 37
Finite element method, 1, 2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 35, 52
Finite volume method (see also sub-domain method), 2
FLOTRAN, 215
FLOTRAN set up, 231
Fluid problems, 37
Fluid properties, 232
Four-node linear rectangular element, 59
Functional, 6, 7, 8

G
Galerkin method, 4, 5, 7, 8, 9
General postprocessor, 50
Generalized Hooke's law, 17, 18
Geometric properties, 37
Geometrical boundary condition, 15, 20, 21
Global coordinate, 8
Global matrix, 13
Global stiffness equations, 27, 29
Glue, 177, 273
Graphical representation, 73
Graphical user interface (GUI), 38, 385
Graphics window, 39
GUI see Graphical user interface

H
Hard copy, 42
Heat flow, 280
Heat flux, 280, 323
Heat transfer, 37, 263, 264
Hertz contact stress (see also contact stress), 136
Hyper-elastic material, 410, 412, 416

I
In Active CS, 149
Incompressible, 231
Input line, 39
Interference fit, 336
Internal energy, 263, 264
International system of units (SI), 44
Interpolation function, 8, 9, 10, 11, 15, 22, 24
Isida's solution, 118
Isometric view, 389
Isotropic, 46, 47, 268, 149

J
Jobname, 40

K
Keypoints, 149
Kinetic energy, 264

L
Launcher, 40
Library of elements, 367, 393, 413
Line contact, 382
Linear isotropic, 417
Lines, 151
List results, 42

Load, 49
apply, 403
body, 49
convection, 300
inertia, 49
step, 49, 358, 443
surface, 49
Local coordinate, 9
Log file, 41

M
Main window, 38
Map onto Path, 237
Material, 37
model, 147, 416, 418, 421
properties, 37, 46, 339
Material Props, 168
Mechanical boundary condition, 15, 20, 21, 25
Mesh, 37
areas, 37, 428
generation, 342, 369
lines, 37
tool, 197, 341, 368, 394
volumes, 37, 364
Meshing, 152, 273
process, 396
Method of weighted residuals, 1, 2, 7, 35
Modal Analysis, 157
Mode I, 106, 116, 118, 119
Mooney-Rivlin, 412, 416
Move volume, 337
Moving table, 188

N
Nodal, 379
contour, 381, 443
solution, 379, 405, 408
Nodal displacement, 22, 23, 24, 29
Node, 47, 129, 130, 131, 138
reselection of —, 129
selection of —, 63, 65, 130
Nonlinear, 46
Notch, 100, 101, 102

O
Offset WP (work plane), 293, 387, 388
Operate, 201
Orthotropic, 46
Output window, 38
Overlap volumes, 294, 335, 362

P
Package, 37
Pan-Zoom-Rotate, 171
Path name, 259
Path operation, 237
Pin, 332, 338, 355
Plane strain approximation, 18
Plot results, 42, 161
PlotCtrls, 171
Poisson's ratio, 18, 19, 53, 56, 57, 78, 79, 85, 86, 94, 98, 106, 110, 120, 123, 138, 140, 149, 365, 391
Postprocessing, 38, 404
Preferences, 365
PREP7 preprocessor, 43
Preprocessing, 37
Primitive shape, 291
Principle of the minimum potential energy, 8
Principle of virtual work, 21
Print, 42
Properties
elastic —, 56, 86, 97, 110, 123
linear isotropic —, 57, 86, 98, 110, 123
— of the materials, 17

R
Rayleigh-Ritz method, 1, 4, 5, 6, 7
Read results, 161, 354
Real constants, 147, 421, 424
Rectangular area, 270
Reference number, 46
Reorder elements, 437
Residual, 1, 2, 3, 6, 7, 8, 25, 35
Resonant frequency, 144
Restore WP, 389
Resume, 40

S
Select, 382
entities, 382, 409, 431, 446
nodes, 433
Shape function, 8, 24
Shear modulus, 18, 19
Shell, 165
Size Cntrls, 152
Solid, 189
Solid Circle Area, 173
Solution, 38, 49
controls, 350, 378, 438, 449
nodal, 354
processor, 48
stage, 298

Space, 222
Specific heat, 289
Static/dynamic, 37
Stationary condition, 6, 7
Stefan-Boltzmann law, 264
Straight bar, 144
Straight Lines, 152
Strain, 14, 15, 16, 17, 18, 19, 21, 22, 24, 25, 26, 31, 34, 74, 107, 110, 117, 124
Strain-displacement
— matrix, 21, 24
— relation, 14, 15, 16
Stress analysis, 51
Stress intensity factor, 104, 106, 116, 118, 119, 141
Stress singularity, 51, 106, 107, 109, 111, 113, 115, 117, 119
Stress–strain matrix, 25
Stress–strain relation, 14, 15, 17, 18
Structural analysis, 37
Sub-domain method (see also finite volume method), 2, 4
Subspace, 157
Substeps, 49
Subtract, 175, 270
area, 270, 318, 387
volumes, 337
Suspension, 163
Symbols, 310
Symmetry, 353
constraints, 374, 377, 403
expansion, 353, 379

T

Target, 346, 373
pick, 373, 398
Temperature, 263
constraints, 302, 304
distribution, 287
gradient, 329
map, 309, 311
Thermal, 264
conductivity, 264, 267, 312, 315
flux, 312
Time history postprocessor, 50
Toolbar, 39
Traction, 20, 21, 25
Triangular constant strain element, 2, 24
Turbulent, 231

U

Undeformed shape, 442
Units, 43
Utility menu, 39, 40

V

Vector Arrow Scaling, 256
Vector plot, 312
View setting, 295
Viewing direction, 365, 406
Virtual displacement, 25, 26
Volume sweeping, 343, 370
von Mises stress, 78, 79, 381, 405, 444, 451

W

Weighting function, 2, 4, 9
Working plane (WP), 283, 292, 305
WP settings, 445

X

XYZ Offset, 204

Y

Young's modulus, 18, 19, 53, 56, 57, 78, 79, 85, 86, 94, 98, 106, 110, 117, 120, 123, 138, 140, 149, 365, 391