

Index

- adjacency list, 14
- algorithm, 13
- alignment, 258
- α -approximate solution, 14
- α -approximation algorithm, 14
- ancestor, 11, 19
- antichain, 203
- approximation algorithm, 14
- approximation ratio, 14
- augmenting path, 24
- augmentation, 246
 - chain, 227
 - connectivity, 246
 - function, 254
 - path, 220
 - star, 8, 249
- base polyhedron, 322
- basic tree, 61
- BFS tree, 20
- blockcactus, 161
- blocking flow, 26
- breadth-first search, 20
- cactus, 55, 154
 - block-, 161
 - sub-, 162
 - trivial, 55, 154
 - uniform, 154
- cactus representation, 55, 155
- canonical
 - complementary, 171
 - cycle-type normal, 161
 - induce a partition, 171
 - junction-type normal, 161
 - normal, 156
 - (s, t) -, 179
- chain, 173
- chain augmentation, 228
- chain representation, 173
- child, 11, 184, 324
- chord, 112
- CMC partition, 154
 - maximal, 154
- CNC representation, 180
- complexity, 13
- component, 3, 86
 - connected, 3, 86
 - k -, 86
 - k -edge-connected, 86
 - λ_j -, 272
 - ℓ -edge-connected, 50
 - maximal, 51
 - strongly connected, 3, 16
- connectivity, 9, 10
 - by tree, 57
 - edge, 9
 - (k, α) -, 35
 - local edge, 9
 - local vertex, 10
 - vertex, 10
- connectivity augmentation, 246
- contractible, 132
- contraction, 7
 - ordering, 200
- cover, 201, 255
- cross, 1
- cut, 9
 - α -, 142
 - (S, T) -, 9
 - compatible, 174
 - complementary, 153
 - correspond each other, 155
 - cross, 174

Cambridge University Press

978-0-521-87864-7 - Algorithmic Aspects of Graph Connectivity

Hiroshi Nagamochi and Toshihide Ibaraki

Index

[More information](#)

372

Index

- cut (*cont.*)
 - di-, 31
 - generated, 9
 - indivisible, 174
 - k -, 86
 - maximal, 9
 - minimal, 9
 - minimum, 10
 - mixed, 35
 - new, 184
 - old, 184
 - s -, 57
 - separating, 9
- cut function, 4, 5
- cut set, 9
- cut size, 9
- cut tree, 47
- cut edge, 9
- cut vertex, 10, 239
- cycle, 11
 - n -, 154
 - parent, 162
 - yield, 158
- cycle distance, 161
- cycle edge, 154
- cycle representation, 173
- DAG, 31
- DAG representation, 31
- deficient, 289, 342
 - in-, 289
 - k -in-, 289
 - ℓ -out-, 289
 - out-, 289
 - set, 289
- degree, 2
 - in-, 2
 - out-, 2
- degree specification, 237
 - p -, 238
- δ -reduction, 123
- δ -skeleton, 124
- δ -skin, 124
- δ -slicing, 192
- demand function, 342
- depth, 11
- depth-first search, 19
- descendant, 11
- detachment, 237
 - f -, 238
 - $f(s)$ -, 238
 - global, 238
 - p -, 238
- DFS tree, 19
- dicut, 31
- digraph, 2
 - bipartite, 2
 - complete, 2
 - multiple, 2
 - s -basally k -connected, 296
- Dinitz's algorithm, 26
- distance labeling, 30
- divide, 1
- dominating, 6, 296
 - non-, 6
- edge, 2
 - adjacent, 2
 - admissible, 30
 - connectivity, 9
 - contractible, 132
 - critical, 146, 171
 - crossing, 235
 - dynamic, 198
 - incident, 2
 - independent, 95
 - multiple, 2
 - noncrossing, 235
 - parent, 162
 - simple, 2
 - undirected, 2
- edge splitting, 140, 217
 - feasible, 141
- edge connectivity, 10
 - local, 9
 - s -proper, 117
- edge-connectivity augmentation function, 254
- empty node, 55
- enumeration, 137
 - all cuts, 137
 - minimum cuts, 145
 - small cuts, 140
- Eulerian graph, 2
- excess, 30
- extreme point, 336
- extreme subset, 315
- extreme vertex set, 52, 192
 - ranged, 261
- Fibonacci heap, 75
- flat pair, 192, 316
- flow, 20
 - blocking, 26
 - maximum, 21
 - skew-symmetric, 22
 - (s, t) -, 20
- flow equivalent, 46

Cambridge University Press

978-0-521-87864-7 - Algorithmic Aspects of Graph Connectivity

Hiroshi Nagamochi and Toshihide Ibaraki

Index

[More information](#)

Index

373

- forest, 11, 12, 57
 - edge-disjoint, 57
 - maximal, 11
 - maximal spanning, 66
- forest decomposition, 66, 73
- Fujishige's algorithm, 110
- function, 1
 - consistent, 130
 - monotone, 130
- Goldberg and Tarjan's algorithm, 30
- Goldberg and Rao's algorithm, 107
- Gomory–Hu tree, 46
- graph, 2
 - α -simple, 80
 - bipartite, 2
 - child, 184
 - chordal, 63, 112
 - complete, 2
 - connected, 3
 - critical, 181
 - di-, 2
 - directed acyclic, 31
 - Eulerian, 2
 - (k, α) -connected, 36
 - k -vertex-connected, 10
 - (k, α) -removable, 84
 - k -edge-connected, 10
 - minimal, 122
 - k -tree-connected, 59
 - k -vertex-connected, 39
 - ℓ -mixed p -connected, 37
 - multi-, 2
 - nonadmissible, 237
 - nonseparable, 239
 - parent, 184
 - strongly connected, 3
 - trivial, 2
 - underlying, 72
 - undirected, 2
- graph search, 16
- h -critical, 120
- h -irremovable, 122
- h -minimal, 120
- head, 2
- Helly property, 62
- hitting set, 60
- hyperedge, 60
 - v -avoiding, 64
- hypergraph, 60
- i -critical, 299
- in-solid, 290
- in-solid partition, 292
- intersect, 1
- isolate, 141
- (k, α) -certificate, 79
 - sparse, 79
- (k, α) -connectivity, 35
- k -critical, 255
- k -critical family, 255
- k -edge-connectivity certificate, 65, 78
 - sparse, 65
- (k, ℓ) -source, 289
- k -partition, 208
- k -subpartition, 208
 - proper, 208
- k -vertex-connectivity certificate, 65, 78
 - sparse, 65
- λ_i -leaf, 272
- laminar, 12, 13
- leaf node, 247
- legal ordering, 74
- level graph, 26
- lexicographically π -minimal, 336
- line digraph, 70
- line graph, 62
- local α -connectivity, 36
- local edge-connectivity, 9
- local ℓ -mixed connectivity, 37
- local vertex-connectivity, 10
- location problem, 282
- loop, 2
- lower k -truncation, 258
- lowering, 258
- MA ordering, 115
- matching, 61
- matching number, 61
- max-back ordering, 74
- max-flow min-cut theorem, 22
- maximum adjacency ordering, 74, 115
- maximum flow, 20
 - algorithm, 25
- MC partition, 147, 154
 - circular, 154
 - maximal, 164
 - (s, t) -, 147
- MD ordering, 316
- mean vector, 338
- Menger's theorem, 34
- min-cut ordered partition, 154
- minimum-cut o -partition, 147
 - (s, t) -, 147
- minimum degree ordering, 192, 316

Cambridge University Press

978-0-521-87864-7 - Algorithmic Aspects of Graph Connectivity

Hiroshi Nagamochi and Toshihide Ibaraki

Index

[More information](#)

374

Index

- mixed cut, 35
 - separate, 36
 - size, 36
- modular, 305
- modulotone, 349
- multigraph, 2
- negamodular, 305
 - crossing, 305
 - fully, 305
 - intersecting, 305
- neighbor, 6
 - in-, 6
 - out-, 6
- node, 155
 - empty, 155
 - k -junction, 156
 - leaf, 162
 - parent, 162
 - root, 162
 - yield, 158
- nontrivial subset, 130
- \mathcal{NP} , 14
- \mathcal{NP} -complete, 14
- \mathcal{NP} -hard, 14
- o -partition, 146
- ordered partition, 146, 153
 - complementary, 171
- orientation, 242
- out-solid, 290
- out-solid partition, 292
- \mathcal{P} , 14
- pairing, 243
 - h -pairing, 243
- parent, 11, 184, 324
- partition, 2
 - induced by a cactus, 153
- partition constraint, 277
- path, 2
 - (u, v) -, 3
 - α -independent, 36
 - augmenting, 24
 - internally vertex-disjoint, 10
 - (s, t) -, 21
- path augmentation, 222
- pendent pair, 50, 115, 130, 307
- perfect elimination ordering, 112
- π -minimal, 336
- pinching, 240
- planarity, 277
- polyhedral structure, 322
- polyhedron, 322
- polynomial time, 14
- posimodular, 305
 - crossing, 305
 - fully, 305
 - intersecting, 305
 - system, 305
 - weakly, 325
- (p, q) -core, 103
- preflow, 30
- push, 31
- push-relabel algorithm, 31
- queue, 20
- random-access machine (RAM), 13
- range, 257
 - bottom, 265
 - lower k -truncation, 258
 - top, 265
 - upper k -truncation, 257
- range set, 257
 - equivalent, 258
 - gapless, 258
 - optimal set, 259
- ranged extreme vertex set, 261
- ranged star augmentation, 258
- reference vertex, 142
- relabel, 31
- representation, 155
- residual graph, 22
- root, 11, 17, 162
- rooted tree, 11
- s -proper, 117
- s -avoiding, 292
- separate, 1, 10, 307
- set function, 304
- simplicity, 276
- s -in-arborescence, 12, 57, 69
- sink, 20
- smallest-last ordering, 192
- solid, 290
- solid partition, 292
- source, 20
- source location problem, 282
- source set, 282
- s -out-arborescence, 12, 16, 57, 69
 - independent, 70
- spanning subgraph, 2
- spanning tree, 11
- sparsification technique, 83
- Sperner family, 349
- splitting, 218, 219
 - complete, 218

Cambridge University Press

978-0-521-87864-7 - Algorithmic Aspects of Graph Connectivity

Hiroshi Nagamochi and Toshihide Ibaraki

Index

[More information](#)

Index

375

- k -feasible, 218, 219
- noncrossing, 235
- partition constraint, 234
- planarity-preserving, 235
- stack, 19
- star augmentation, 8, 122, 249
 - k -regular, 193
 - ranged, 258
- (s, t) -decomposition, 181
- st -join, 127
- subgraph, 2
 - induced, 2
 - spanning, 2
- submodular, 305
 - crossing, 305
 - fully, 305
 - intersecting, 305
 - system, 305
- supermodular, 305
 - crossing, 305
 - fully, 305
 - intersecting, 305
 - system, 305
- symmetric, 305
- system, 304
- tail, 2
- T -connectivity, 37
 - local, 37
- T -independent, 37
- totally optimal, 259
- trail, 3
 - Eulerian, 3
- transversal, 60, 342
- transversal number, 60
- tree, 11, 12, 57
 - basic, 61
 - completely independent, 72
 - consistent with, 208
 - flow equivalent, 46
 - rooted, 11
 - s -edge-independent, 71
 - s -vertex-independent, 71
- tree edge, 17, 154
- tree hypergraph, 61, 290
- twin cuts, 149
- undirected graph, 2
- uniform, 283
- upper k -truncation, 257
- vertex, 2
 - active, 31
 - connectivity, 10
 - even, 243
 - odd, 243
 - simplicial, 112
- vertex cut, 10
 - (A, B) -, 10
- vertex connectivity, 10
 - local, 10
- v -solid, 345
- X -covering, 255
- X -feasible, 327
- X -optimal, 327
- Y -minimizer, 202