index

*Star, 116

Alice in Wonderland, 1
AlphaGo, 84
AlphaZero, 84

Birdcage, see Bridg-It
blunder, 3, 20
Bridg-It, 86
Brower's fixed-point theorem, 115

chess, xv, 27, 37, 51
DeepBlue, 84
Japanese, see shogi
Clay Millenium Prize, 87
computers, 81

Dark Hex, 97
$2 \times 2$, 98
$3 \times 3$, 99
$4 \times 4$, 102
tip, 98

four-color problem, 25

Go, xv, 13, 19, 37, 40, 51, 73, 75, 84, 116
grook, 25

Hex
    acute corner loses, 111
    acute corner neighbor loses, 111
    analysis
        $4 \times 4$, 29
        $5 \times 5$, 33
        $6 \times 6$, 74
    balancing the game, 5
    block your opponent, 10
    board
        $11 \times 11$, 26, 37

irregular, 43
regular, 42
cell
    captured, 54
centermost, 6
dead, 53
    live, 53
    computationally hard, 6, 87
computer player
    MoHex, 84
    most-winning-cell, 86
    resistance network, 83
    trick machine, 86
connection
    bridge, 10
    ladder, 19
    safe, 13, 16, 17
    super, 18
    template, 10
    virtual, 13
    weak, 17
Dark, see Dark Hex
extra stones, 40
game notation, 2
Gardner's column, 33, 115
mustplay region, 19
no draws, 6, 37
on a checkerboard, 28
P-space complete, 87
Polygon, 26, 27, 115
properties, 6
public tutorial, 37
rules, 1
short diagonal openings, 110
solved openings
    $10 \times 10$, 82
    $6 \times 6$, 82
7×7, 82
8×8, 82
9×9, 82
solver, 81
strategy
10×10, 77
11×11, 77
5×5, 73
7×7, 75
8×8, 76
9×9, 76
closer-edges-player wins, 6
first-player wins, 6
mirror-pairing, 43, 45
pairing, 11
visualizer, 76
swap rule, 5
Thorborg’s puzzle, 33
uniform-random
n even, 92
2×2, 89
3×3, 90
move, 85
open questions, 93
versus deterministic, 94
unsolved openings
11×11, 110
win-threat, 11, 15
winning path, 14
winset
minimal, 51
hexaflexagon, 28
HexWiki, 13
Kadon games, 61
Kaliko, 116
Kriegspiel Hex, see Dark Hex
labyrinth, 10
Mathematics Magazine, 99
miai connection, 13
Middelfart, xiii
Mudcrack-Y and Poly-Y, 61
pivot diagram, 11
Politiken newspaper, 115
Poly-Y, 116
Polygon, see Hex
random process, 89
Reverse Hex, 32
shogi, 84
Sperner’s lemma, 115
Star, 116
strategy, 41
fixed, 99
minimax, 100
mixed, 99
winning, 9
strategy stealing, 42
superellipse, 25
traffic circle, 25
Triangle, see Y
University
Alberta, xiii, 69, 82
Bowling Green, 111
Carnegie Mellon, 82
Evansville, 102
McGill, xiii, 93
Michigan, 32
New York, 29
Princeton, 28
Queen’s, Kingston, xiii
Southern Denmark, xiii
Wisconsin, 111
winning move, 9
Winning Ways, 116
winrate, 93
Y, 32, 59
base, 59
base-2, -3, -4 analysis, 60
bridge connection, 60
exactly one winner, 63
first-player wins, 61
generates Hex, 61
geodesic, 61
draw, 65
Mudcrack, 116
no draws, 61
Schensted/Titus design, 61
ziggurat, 13