

Subject Index

- AAT, 345, 347
- AAVSO, 457ff
- Abrikosov fluxoid, 246
- Accretion disk
 - beat-frequency model, 303, 313–4, 317
 - characteristics, 415
 - disk corona (ADC), 428, 440
 - instability, 44, 46–7, 49, 51
 - outburst types, 45
 - orientation, 60
 - precession, 352, 355, 440
 - quiescence, 45, 47
 - radius, 356
 - relativistic disk, 329
 - viscosity, 44ff
- Accretion induced collapse (AIC), 26, 75–8, 96–7, 236, 284, 436
- Accretion rate
 - Eddington, 33, 245
 - near-Eddington, 251, 440
 - super-Eddington, 455
- Accretion torque, 61–2
 - Ghosh-Lamb model, 313–4
- Accretor, 82, 86, 455
- Accretor-propellor model, 454–5
- AGB phase, 253
- AGN, 207
- AM Her systems, 403ff
 - accretion flow, 410, 412
 - cyclotron lines, 407
 - magnetic fields, 409
 - orbital periods, 405, 409
 - relation to DQ Her systems, 404
 - 'soft X-ray' problem, 410
 - space density, 405
 - synchronization, 404
 - X-ray pre-heating, 324
 - Zeeman lines, 407–8
- Annihilation line, 347
- Apsidal motion, 275
- Arecibo, 188, 208–9, 227, 229, 280
- ASCA, 130, 289ff, 321ff, 336, 485
- Asiago supernova catalog, 111
- Atoll sources, 302–3, 306
- Australia Telescope Compact Array (ATCA), 370
- B-P* diagram, 57–8, 244–5
 - death line, 244
 - Hubble line, 244
 - spin-up line, 61, 64, 244
- Barycentric Coordinate Time (BCT), 204
- BATSE, 19, 313–4, 363ff, 369–71, 467ff, 477ff, 490, 492
 - burst catalog, 468–9
- BATSE Coordinates Distributions Network (BACODINE), 472
- Beat-frequency model, 303, 313–4, 317
- Berkeley SN search, 112–3

- Be stars, 263ff
 - circumstellar disk, 263, 267
 - equatorial disk, 59
 - magnetic field, 267
 - models, 268
 - radio observations, 266
 - stellar wind, 263, 275
 - with millisecond pulsar, 59
 - with X-ray pulsar, 313
- Be/X-ray binaries, 13, 99
- Binary stars
 - accretion scenarios, 143
 - binary evolution, 3ff, 82
 - coalescence, 13, 17ff, 25, 32
 - common-envelope evolution, 3ff, 89, 144
 - common-envelope phase, 146
 - common-envelope spiral in, 62, 95–6
 - disruption, 32, 57
 - dynamical time scale, 418
 - He star core collapse, 95–6, 98
 - hydrodynamical instability, 11
 - irradiation of companion, 250, 252
 - mass-transfer instability, 44ff
 - scenario machine, 81ff
 - tidal instability, 47
 - binary neutron stars, 17ff, 236
 - coalescence, 17ff, 32, 159ff, 167, 219, 489ff
 - global instability, 18–24
 - gravitational radiation, 18–23, 157ff
 - paucity, 219
 - progenitor, 249
 - synchronization, 24
 - binary radio pulsars, *see* Radio pulsars — binary pulsars
 - binary white dwarfs, 25
 - coalescence, 25
 - type Ia supernovae, 25
 - black-hole binaries, *see* Black-hole binaries
 - black hole – neutron star binaries, 95–6, 499
 - high-mass binary pulsars, *see* High-mass binary pulsars
 - high-mass X-ray binaries, *see* High-mass X-ray binaries
 - hypercritical accretion, 97, 249
 - intermediate-mass X-ray binaries, *see* Intermediate-mass X-ray binaries
 - low-mass binary pulsars, *see* Low-mass binary pulsars
 - low-mass X-ray binaries, *see* Low-mass X-ray binaries
 - soft X-ray transients, *see* Soft X-ray transients
 - X-ray binaries, *see* X-ray binaries
 - X-ray pulsars, *see* X-ray pulsars
- Birth rate
 - low-mass binary pulsars, 235–6, 238, 241, 250
 - low-mass X-ray binaries, 34, 250
 - Thorne-Żytkow objects, 34, 250
- Birth rate problem, 236, 241
- Blaauw mechanism, 98
- Black-hole binaries, 93ff
 - coalescence, 167
 - evolution, 93ff
 - triple scenarios, 97–8
 - formation, 93ff
 - galactic population, 99
 - population, 100
 - progenitor, 95
 - relativistic accretion disk, 329

- X-ray PHA spectra
 - reflection component, 327
- X-ray transients, 99
 - recurrence time, 51
- Black-hole candidates, 37–9, 93, 102, 304ff, 326–9, 333, 341ff, 351ff, 366, 430
 - fluorescent iron line, 327
 - similarities to neutron stars, 306
 - source states, 304, 326
 - X-ray PHA spectra, 326–9
- Blue stragglers, 384
 - formation in globular clusters, 384ff
- Calan-Tololo SN search, 112
- Cambridge, 227
- Cataclysmic variables, 457
 - companions
 - irradiation, 65ff
 - superadiabatic convection zone, 66
 - disk sources, 397
 - dwarf novae, *see* Dwarf novae
 - evolution, 65ff, 76
 - irradiation, 65ff
 - irradiation instability, 70–1
 - formation, 3ff
 - globular clusters, 76
 - intermediate polars, *see* Intermediate polars
 - irradiation, 65ff
 - irradiation-induced mass transfer, 67–70
 - limit cycle, 45, 70–1
 - orbital period, 405, 409
 - period gap, 70
 - polars, *see* AM Her systems
 - progenitors, 10
 - recurrent novae, 457ff
 - superhumps, 352
- Cerro Tololo Interamerican Observatory (CTIO), 439, 442
- CfA archive, 109
- Christodoulou memory, 169
- Circumpulsar disk, 193
- Circumstellar matter
 - around supernovae, 130ff
- Classical novae, 435
- Coalescence
 - binary neutron stars, 17ff, 32, 159ff, 167, 219, 489ff
 - neutrino emission, 497–8
 - disk formation, 497
 - binary white dwarfs, 25
 - black-hole binaries, 167
 - massive black holes, 179
 - rates, 161ff, 219, 497–9
- Common-envelope evolution, 3ff, 89, 144
 - coalescence, 13
- COMPTEL, 472
- Compton Gamma-Ray Observatory (CGRO), 313, 467ff, 477, 490
- Corbet diagram, 232
- Coronal lines, 460
- Corotation radius, 83
- Cosmic strings, 207
- CTIO, 136
- Cyclotron lines, 407
- C+O stars
 - as SN progenitors, 121ff
- Death line, 244
- Dim X-ray sources, 394
 - counterparts, 390, 397
 - X-ray PHA spectra, 395
- Dispersion measure, 90, 263ff, 271, 275
- Doppler tomography, 349

- DQ Her systems
 comparison to AM Her systems, 404
- Dwarf novae, 43ff
 coronal flow, 47
 irradiation of companion, 48
 mass transfer instability model, 44ff
 outbursts, 43ff
 recurrence behaviour, 48
 superoutbursts, see Superoutbursts
 UV lag, 46
- Eclipsing systems
 binary pulsars, 73, 203
 super-soft sources, 440
 symbiotic binaries, 451
- Eddington
 accretion rate, 33, 245
 near-Eddington, 251, 440
 super-Eddington, 455
 limit, 13, 35, 427, 445–8
 sub-Eddington luminosity, 454
- Effelsberg, 208
- EGRET, 468, 470–2, 475
- EINSTEIN, 321, 334, 389, 391, 393, 398–9, 415, 425ff, 439, 441–2
- Ejector, 82, 86
- Ellipsoidal variations, 343–4, 351ff
- Equation of state (EOS), 17, 20–3
- EXOSAT, 292, 334, 411
- e^{\pm} annihilation line, 347
- Faraday rotation, 90
- Fireballs, 493ff
 baryon loading, 494
 beaming, 496, 499
 evolution, 494
 gamma-ray bursts, 495
 interaction with ISM, 495
- Galaxies
 distribution, 207
 mass distribution, 199
- Gamma-ray bursts, 19, 25, 168, 261, 467ff, 477, 490ff
 counterparts, 472
 cosmological models, 491–2
 distribution, 467, 473–4
 duration distribution, 470
 event rate, 492–3
 fireball model, 493ff
 galactic models, 491
 gamma-ray line features, 472
 homogeneity, 490–1
 isotropy, 490, 492
 location, 475
 luminosity function, 493
 morphologies, 467–8
 repetition, 473
 soft gamma-ray repeaters, see Soft gamma-ray repeaters
 spectral characteristics, 470, 472
 time dilation effect, 470
 time profiles, 468
- General relativity (tests), 157, 203
- Georotator, 82
- GEO600, 159
- GINGA, 51–2, 57, 290–1, 293, 334
- Globular clusters, 32, 73ff, 199, 201–2, 377ff, 389ff
 binary radio pulsar, 73
 blue stragglers, 384ff
 cataclysmic variables, 76
 collisions, 32
 core sources, 396–7
 evolution, 76, 199
 foreground stars, 393

- 'heating' mechanisms, 378
- luminosity function, 393
- millisecond pulsars, 279ff, 382
- primordial binaries, 378–9
- radio pulsars
 - proper motions, 197, 199
- stability, 202
- stellar dynamics, 377ff
- stellar evolution, 379
- triple systems, 380, 382ff
- X-ray bursters, 390
- X-ray colour-colour diagram, 396
- X-ray luminosity function, 398
- X-ray sources, 433
 - optical counterparts, 397
 - population, 392
- GMRT, 209
- GPS, 198, 205
- GRANAT, 327
- Gravimagnetic parameter, 83
- Gravitational capture radius, 83
- Gravitational radiation, 153ff, 203, 207, 250
 - background, 197, 207–8
 - spectrum, 208
 - chirp, 21, 163
 - detectors, 153ff
 - from binary neutron stars, 18–23, 157ff
 - radiation efficiency, 23
 - relativistic effects, 164ff
 - signal estimates, 160, 171, 177
 - sources
 - binary stars, 178
 - coalescing compact binaries, 159ff, 499
 - coalescing massive black holes, 179
 - cosmic strings, 207
 - spinning neutron stars, 173ff
 - stellar collapse, 169ff
 - waveforms, 19, 162ff, 167ff
- Green Bank, 208–9, 227
 - NRAO, 208–9
 - Telescope (GBT), 209
- H II regions, 421
- H α nebulae around pulsars, 229
- Harvard plate archive, 459
- Hierarchical tree algorithm, 5
- High Energy Transient Explorer (HETE), 475
- High-mass binary pulsars (HMBP), 247
 - orbital period, 249
 - origin, 248
- High-mass X-ray binaries (HMXB), 32–33, 38, 62, 247, 289ff
 - companions
 - blue supergiant, 96
 - evolution, 3ff, 93–7, 102, 248
 - spiral in, 248–9
 - supernova, 38, 62
 - orbital period changes, 290ff
 - progenitor, 34, 36
 - Wolf-Rayet star companions, 289, 292
 - X-ray spectroscopy, 295ff
- He stars, 13–4, 34, 142, 248–9
 - core collapse, 95–6, 98
 - white dwarfs, 250, 253
- HEAO-1, 390, 398–9
- Hubble constant, 19, 167
- Hubble line, 244
- Hubble Space Telescope (HST), 51, 132, 137–8, 203, 390, 397
- Hydrodynamical instability, 11
- ICE, 483

- IMF, 101
- Instability
- disk instability, 44ff, 100
 - global instability, 18–24
 - hydrodynamical instability, 11
 - irradiation instability, 70–1
 - mass-transfer instability, 44ff
 - thermal instability, see disk instability
 - tidal instability, 47
 - tidal-thermal instability, 47–8
- Intermediate-mass X-ray binaries (IMXB), 100–2, 247, 253
- descendants, 254
- Intermediate polars, 85, 322–3
- cooling flow, 322
 - ionization equilibrium, 322
 - multi-temperature plasma, 322
- International Atomic Time (TAI), 204
- International Ultraviolet Explorer (IUE), 451
- Interplanetary Network (IPN), 475, 483
- Ionization nebulae, 420–1
- Iron line, 327
- Irradiation-induced mass transfer, 67–70
- Irradiation instability, 70–1
- ISAS, 321
- Isolated pulsars, 243, 245, 248
- Jets, 329, 372, 440, 451–5
- precession, 329, 444
 - radiative cooling, 330
- Jodrell Bank, 208, 227, 230
- Kelvin time, 143
- Keplerian-frequency model, see Beat-frequency model
- Kick velocity, 14, 78, 217, 240
- Kitt Peak, 472
- KONUS, 478, 480, 486
- KPNO, 136
- LAGOS, 25–6
- Leuschner SN search, 114
- Lick Observatory, 136
- Light cylinder radius, 83
- LIGO, 17–8, 157ff, 490
- Limit cycle, 45, 70–1
- LISA, 175ff
- Lithium
- abundances, 32, 39
 - production, 31
 - soft X-ray transients, 346
 - lithium stars, 32
- Low-mass binary pulsars (LMBP), 62, 78, 235ff, 247, 250, 252
- birth rate, 235–6, 238, 241, 250
 - galactic distribution, 235, 237–8
 - kick velocities, 78, 240
 - orbital period distribution, 250–1
- Low-mass X-ray binaries (LMXB), 34, 38, 43, 52, 62, 65, 70, 247, 250, 324, 333, 444
- angular momentum loss, 99
 - atoll sources, 302–3, 306
 - binary disruption, 252
 - birth rate, 34, 250
 - black-hole transients, 100
 - evolution, 3ff, 97, 100–2, 250
 - irradiation of companion, 52–3
 - near-Eddington accretion, 251, 440
 - formation, 96
 - gravitational radiation, 250
 - inclination effects, 308–10
 - magnetic braking, 250
 - orbital period changes, 292–3

- orbital period distribution, 251
- X-ray bursters, 324
- X-ray colour-colour diagrams, 302
- X-ray PHA spectra, 324
- X-ray power spectra, 302ff, 365
 - noise components, 302
 - QPO, 302, 304
- Z sources, 302, 306
- Lowell Observatory, 136
- Magnetic braking, 250–1
- Magnetic field
 - AM Her systems, 409
 - Be stars, 267
 - binary pulsars, 62, 78, 245–6
 - X-ray transients, 318
 - decay, 62, 78
 - neutron stars, 303
 - Ohmic decay, 245–6
 - soft X-ray transients
 - companion, 336
 - symbiotic stars, 454
 - versus spin period diagram, see *B-P* diagram
 - white dwarfs, 409
- Magnetor, 82
- Mariner, 206
- Mars-96, 475
- Mass-transfer (enhancement) instability model, 44ff
- McDonald Observatory, 358
- Millisecond pulsars, 37, 62, 187–8, 193, 197, 201, 243, 247, 251, 337, 390
 - age, 201
 - companions, 201–3
 - evaporating companion, 252
 - evolution, 247
 - formation, 243ff, 253
 - glitches, 201
 - in globular clusters, 279ff, 382
 - near-millisecond pulsars, 253
 - optical counterparts, 202
 - planets, 187ff, 203, 253
 - population, 199, 252
 - progenitor, 57ff, 326
 - pulsar monitoring telescope, 210
 - rotation parameter, 197, 201
 - searches, 225ff
 - Shklovskii effect, 232
 - single, 57ff, 252
 - spin evolution, 57ff
 - tidal dissipation of companion, 252
 - timing, 197ff, 207
 - timing noise, 201
- Molonglo Observatory Synthesis Telescope (MOST), 364, 369, 370–1
- Monte Carlo techniques, 142–4, 417
- Nançay, 208–9
- Neutron stars, 321, 333, 416
 - Abrikosov fluxoid, 246
 - conductivity, 64
 - crustal plate tectonics, 246
 - Eddington limit, 35
 - equilibrium spin period, 245
 - equation of state, 17, 20–3
 - formation by AIC, 26, 96–7, 236, 184
 - halo population, 261
 - kick velocity, 14, 217, 240
 - magnetic field, 303
 - Ohmic decay, 245–6
 - mass (limit), 279ff, 342
 - radius, 23
 - similarity to black-hole candidates, 306
 - spin evolution, 57ff, 81ff, 337, 363ff

- superfluid vortices, 246
- Novae
 - dwarf novae, see Dwarf novae
 - recurrent novae, 416, 456ff
 - supernovae, see Supernovae
 - symbiotic novae, 416, 456
 - X-ray novae, 342
- NRAO Green Bank, 208–9
- OB-association, 147
- Oblique rotator, 455
- Optical counterparts
 - dim X-ray sources, 397
 - millisecond pulsars, 202
 - supersoft sources, 415, 443
- Orbital periods 290ff, 405, 409
 - AM Her systems, 405, 409
 - distribution
 - binary radio pulsars, 233
 - high-mass binary pulsars, 249
 - low-mass binary pulsars, 250–1
 - low-mass X-ray binaries, 251
 - magnetic cataclysmic variables, 405
 - non-magnetic cataclysmic variables, 405
 - orbital period changes, 290ff
 - measurements, 293
 - mechanisms, 294ff
 - period gap, 70, 250–1
- OSSE, 57, 130, 318
- Outbursts
 - dwarf novae, 43ff
 - recurrence behaviour, 48
 - inside-out, 45, 47, 50
 - outside-in, 45, 50
 - radio outbursts, 369ff
 - superoutbursts, see Superoutbursts
 - symbiotic binaries, 451–2
- Parkes, 208, 227, 230, 264, 272
- Period gap
 - cataclysmic variables, 70
 - low-mass binary pulsars, 250–1
- Planetary nebulae, 422, 431, 446
 - luminosity function (PNLF), 422
- Planets
 - around black holes, 37
 - around radio pulsars, 25, 38, 187ff, 193, 203, 247, 253
 - circumpulsar disk, 193
 - formation, 193, 253
 - gravitational perturbation, 188
 - around Sun-like stars, 195
 - around white dwarfs, 25
 - Solar system, 192–3, 195, 206
 - dynamics, 205
 - stellar spectroscopy, 195
- Plasma torque, 59
- Power spectra, 302ff, 313–5, 365
 - power-law noise, 315
 - quasi-periodic oscillations (QPO), see QPO
- Prognoz, 483
- Propellers, 82, 86, 454–6
 - superpropellers, 82
 - symbiotic binaries, 454–6
 - torque
 - subsonic, 59
 - supersonic, 60
- Pulsars, see Radio pulsars and X-ray pulsars
- PVO, 473
- Quasi-periodic oscillations (QPO), 302, 304, 314–5, 317
 - beat-frequency model, 303, 313–4, 317

- Radio outburst, 369ff
- Radio pulsars, 85
- acceleration, 282
 - ages, 259–60
 - B-P* diagram, see *B-P* diagram
 - binary pulsars, 18, 22, 89, 201, 235ff, 243, 247, 279ff
 - accretion disk orientation, 60
 - apsidal motion, 275
 - B/Be star companion, 263ff, 271ff, 313
 - black-hole companion, 276–7
 - companion star, 247
 - disk spin-up/spin-down, 60
 - eccentricities, 233, 382
 - eclipse, 73, 203
 - equatorial disk, 59
 - evolution, 62, 73ff, 247
 - formation, 102, 243ff
 - globular cluster, 73
 - magnetic field strength, 245
 - magnetic field decay, 62, 78
 - magnetic field distribution, 246
 - magnetic field evolution, 245–6
 - orbital periods, 233
 - progenitors, 57ff
 - recycling scenario, 236
 - Reverse Mass Transfer scenario, 96, 100
 - spin evolution, 57ff
 - tidal capture, 74, 77
 - tidal circularization, 75
 - tidal heating, 75
 - tidal interaction, 275
 - black hole-neutron star pulsar
 - formation, 96
 - companions
 - population, 243
 - dispersion measure, 263ff, 271, 275
 - distances, 259–60
 - distribution, 213, 215
 - evolution, 38
 - pulsar ejection, 38
 - H α nebulae, 229
 - isolated pulsars, 243, 245
 - recycled, 248
 - high-mass binary pulsars, see High-mass binary pulsars
 - low-mass binary pulsars, see Low-mass binary pulsars
 - Magellanic Clouds, 271
 - millisecond pulsars, see Millisecond pulsars
 - near-millisecond pulsars, 253
 - planetary companions, 25, 38, 188, 193, 195, 228, 247
 - circumpulsar disk, 193
 - formation, 193, 253
 - polarization, 265
 - progenitor 247
 - proper motions, 197, 199, 214, 259
 - recycled pulsars, see Recycled pulsars
 - rotation measure, 263ff
 - runaway, 62
 - scintillation, 214
 - searches, 225ff, 257
 - Shapiro delay, 200, 203
 - SNR associations, 257ff
 - spin evolution, 57ff
 - accretion torque, 61–2
 - electro-magnetic braking torque, 59
 - spin period, 243
 - spin-up/spin-down, 244
 - timing, see Timing
 - timing noise, 201, 274
 - velocities, 213ff, 258

- correlation with magnetic moment, 218
- X-ray transients
 - quiescence, 325
- Rapid proton (rp) process, 31, 39
- Recurrent novae, 416, 457ff
- Recycled pulsars, 37, 57, 61–2, 96, 100, 243, 245, 248, 333
 - binary disruption, 57
 - isolated pulsars, 248
 - magnetic field distribution, 62
- Recycling scenario, 236
- Reverse Mass Transfer scenario, 96, 100
- Roche lobe, 343
- ROSAT, 51, 130, 132, 292, 321, 325, 333ff, 389ff, 405, 411, 415, 417, 420, 425ff, 439ff, 447, 486
 - All-Sky Survey, 390
- Rotational broadening, 343–4
- RS CVn systems, 344

- S-wave, 349
- SAS-3, 290
- Shapiro delay, 200, 203
- SHEVE VLBI array, 370
- Shklovskii effect, 239
- Smooth particle hydrodynamics
- Soft Gamma Repeaters (SGR), 472, 477ff
 - counterparts, 485ff
 - positions, 481
 - profiles, 479, 482
 - properties, 478, 480, 482
 - recurrence, 483
- Soft X-ray transients, 39–40, 43ff, 93, 102, 333ff, 342, 351ff, 363ff, 398
 - accretion disk, 352
 - accretion rate, 334
 - black-hole candidates, 93, 102, 341ff, 351ff, 366
 - boundary layer, 336
 - companion star, 336
 - irradiation, 52–3, 335
 - magnetic field, 336
 - rotation period, 336
 - transient mass transfer, 335
 - coronal activity, 325
 - disk instability, 100
 - ellipsoidal variations, 351ff
 - formation, 39
 - infrared photometry, 356–8
 - inside-out/outside-in outbursts, 50
 - lithium
 - enhancement, 346
 - abundances, 32, 39
 - mass functions, 342
 - mass transfer instability model, 44ff, 67–70
 - neutron star
 - spin evolution, 337
 - progenitor, 38
 - quiescence, 51–2, 325–6, 333ff
 - radio observations, 364–5
 - rapid proton (rp) process, 39
 - recurrence time, 51
 - spots on companion, 352
 - superhumps, 352ff
 - superluminal motion, 364
 - transient mass transfer, 335
 - X-ray burstser, 324
 - X-ray pulsar, 313
- Solar Maximum Mission (SMM), 472
- Solar System
 - planets, 192–3, 195, 205–6
- Source states, 304, 308–9
- Space Telescope Science Institute (STScI) GASP system, 136

- Stellar wind, 35, 59, 95, 142, 144, 147, 248, 263, 275, 452
- Stopping radius, 83, 85
- Superaccretor, 82
- Superejector, 82
- Superhumps
 - in cataclysmic variables, 47, 352
 - in soft X-ray transients, 352ff
 - period, 348, 352, 356–7
 - tidal effects, 352
- Superluminal motion, 364
- Supernovae
 - accretion scenarios, 143
 - discoveries, 111
 - evolution
 - merger scenario, 143
 - hybrid, 109
 - hydrodynamics, 144
 - kicks, 32, 34
 - multiple events in galaxies, 115
 - precursor
 - blue supergiant, 143–4, 146–7
 - progenitors, 15–6, 108
 - OB-associations, 147
 - stellar wind, 144, 147
 - radio observations, 109
 - rates, 108, 111, 115–6
 - searches, 112
 - type I, 147
 - type Ia, 25, 423, 436
 - peak luminosity, 113
 - rate, 423
 - type Ib/c, 98, 107ff, 119ff, 135ff, 142, 144
 - absence in E galaxies, 109
 - association with star formation, 108
 - association with WR stars, 98, 109
 - binary evolution, 98, 115–6, 121ff
 - environment, 135ff
 - formation rate, 124
 - hydrogen lines, 110
 - light curves, 109, 111, 116, 125ff
 - peak luminosity, 113, 15–6
 - progenitors, 108, 116–7, 121ff, 135ff, 142
 - radio observations, 109, 138–9
 - spectra, 107–9
 - statistics, 110ff
- type II, 141ff
 - binary merger, 142
 - binary progenitors, 142
 - hydrodynamic calculations, 144
 - light curves, 145–8
 - peak luminosity, 116
 - precursor, 143–4, 146–7
 - progenitors, 142–4, 146–8
 - rates, 116
- type IIb/L, 119ff, 129
- type IIc, 120, 129
- type IIp, 120
- Supernova remnants
 - ages, 259–60
 - associations, 257ff
 - distances, 259–60
 - interaction composites, 261
 - pulsar associations, 257ff
 - radio imaging, 257
 - X-ray observations, 261
- Superoutbursts, 47–8
 - superhumps, 47
 - tidal instability, 47
 - tidal-thermal instability, 47–8
- Superpropellers, 82
- Supersoft (X-ray) sources, 391, 415ff, 425ff, 439, 445ff
 - accretion disk

- characteristics, 415
- disk corona, 440
- precession, 440
- bipolar outflow, 442
- black-hole candidates, 416
- classical nova, 435
- collimated outflow, 440, 442
- companion star
 - giant branch, 416, 418
- distribution, 417
- eclipsing systems, 440
- Eddington limit, 445–8
- evolution, 416, 418, 435
- finding charts, 443
- H II regions, 421
- ionized gaseous nebulae, 420–1, 422
- jets, 440
 - precession, 444
- models, 425ff, 445
- nuclear burning, 416, 418
- optical
 - counterparts, 415, 443
 - light curves, 441
 - observations, 430ff
- parameters, 434
- planetary nebula, 422, 431, 446
- population, 417, 420
- recurrence, 430
- recurrent novae, 416
- supersoft nebulae, 421–2
- symbiotic star, 432–5, 447
- thermal time scale, 418
- UV observations, 430–2
- white-dwarf (atmospheres), 416, 428, 432, 445–6
 - X-ray PHA spectra, 445
- SU UMa systems, 47–8, 352
- Symbiotic binaries, 451ff
 - accretor-propellor model, 454–5
 - accretor state, 455
 - companion star
 - giant branch, 416, 418
 - eclipsing systems, 451
 - flickering, 454
 - high and low state, 454
 - jets, 451–5
 - oblique rotator, 455
 - outbursts, 451–2
 - propellers, 454–6
 - stellar wind, 452
 - sub-Eddington luminosity, 454
 - super-Eddington accretion, 455
 - wind accretion, 451, 456
- Symbiotic Mira, 456
- Symbiotic novae, 416
 - recurrent, 456
- Symbiotic star, 457
- Synchrotron
 - radiation, 364
 - self absorption, 372
- TENMA, 290
- Terrestrial Time (TT), 204–5
- Thermal (disk) instability, 47
- Thorne-Żytkow objects (TŻOs), 12, 29ff, 62, 97, 248, 253
 - binary merger, 34
 - birth rate, 34, 250
 - envelope, 36–7
 - evolution, 29ff
 - common-envelope phase, 33, 62, 97–8
 - neutrino-dominated regime, 35
 - formation
 - supernova kick, 32, 34
 - globular clusters
 - collisions, 32
 - gravitational energy, 30

- lithium abundances, 32, 39
- neutrino loss, 35
- neutron stars
 - spin evolution, 36–7
- nuclear burning, 30
- rapid proton (rp) process, 31, 39
- red-supergiant appearance, 30
- similarities to lithium stars, 32
- stellar wind, 35
- structure, 29ff
- time scales, 37
- Tidal**
 - capture, 74, 77
 - circularization, 75
 - dissipation of companion, 252
 - heating, 75
 - interaction, 18–20, 275, 352
 - instability, 47
 - torque, 61–2
- Tidal-thermal instability model, 47–8
- Time dilation effect, 470
- Time scale**
 - atomic time scale, 205
 - Barycentric Coordinate Time (BCT), 204
 - cooling time scale, 37
 - dynamical time scale, 418
 - International Atomic Time (TAI), 198, 204
 - Kelvin time, 143
 - Kelvin-Helmholtz time scale, 37
 - Terrestrial Time (TT), 204–5
 - thermal time scale, 418
 - viscous time scale, 37
- Timing, 197ff, 207**
 - analysis, 314
 - (millisecond pulsar) array, 205, 208–9
 - arrival time transformation, 206
 - atomic time scale, 205
 - Barycentric Coordinate Time (BCT), 204
 - Doppler shifts, 207
 - ephemeris (dipole) perturbations, 207
 - galactic motion, 201
 - International Atomic Time (TAI), 198, 204
 - interstellar plasma, 199
 - lenses, 200
 - parallax, 197, 199
 - planet perturbation, 188, 192
 - power-law noise, 201
 - power spectra, see Power spectra
 - pulse arrival times, 192, 197
 - residuals, 191, 207, 209
 - Solar system barycenter, 199
 - space-time metric, 200
 - Terrestrial Time (TT), 204–5
 - time (monopole) perturbations, 207
 - times-of-arrivals (TOA), 188, 201
 - timing noise, 201, 274
- Torque**
 - accretion torque, 61–2
 - Ghosh-Lamb model, 313–4
 - electromagnetic braking, 59
 - subsonic propellor, 59
 - supersonic propellor, 60
 - tidal, 61–2
- Transient Gamma-ray Spectrometer (TGRS), 475**
- Triple scenarios, 97–8**
- Triple systems, 380, 382ff**
- UHURU, 290, 389, 391**
- UKIRT, 345**
- Ulysses, 470–11, 475**

- Usada, 208
 UV lag, 46
- Venera 11–13, 478
 VIRGO, 18, 157ff, 490
 Viscosity, 44ff
 VLA, 370, 454
 VLBA, 370
 VLBI, 200, 369, 370–1
 Voyager, 20
- WATCH, 327
 Westerbork, 209
 White dwarfs
 - binary white dwarfs, 25
 - C-O white dwarfs, 25, 253
 - He white dwarfs, 250, 253
 - magnetic fields, 409
 - model atmospheres, 428, 432, 445–446
 - O-Ne-Mg white dwarfs, 25, 75
 - planetary companions, 25
 - radius, 447
- WHT 344, 347
 WIND, 475
 Wolf-Rayet (WR) stars, 83, 87, 289, 292
 - evolution, 98, 100
 - SN Ib/c progenitors, 136–8
 - winds, 139
- X-ray binaries, 93ff
 - adiabatic flow, 330
 - bipolar jet, 329
 - black-hole binaries, *see* Black-hole binaries
 - black-hole candidates, 326–9, 341ff
 - source states, 326
 - evolution, 93
 - Wolf-Rayet, 98, 100
 - jets, 329
 - kicks, 99
 - line spectroscopy, 321
 - neutron stars
 - equilibrium spin period, 245
 - orbital period changes, 290ff
 - Roche lobe overflow, 248
 - stellar wind, 248
 - X-ray binary pulsars, 57ff
 - spin evolution, 57ff
 - X-ray transient, 313ff
 - X-ray bursters
 - low-mass X-ray binaries, 324
 - globular clusters, 390
 - X-ray bursts, 40, 306, 390
 - X-ray colour-colour diagram
 - globular cluster sources, 396
 - low-mass X-ray binaries, 302
 - X-ray ionized nebula, 428
 - X-ray novae, 342
 - X-ray PHA spectra, 321ff
 - black-hole binaries, 327
 - black-hole candidates, 326–9
 - dim X-ray sources, 395
 - high-mass X-ray binaries, 295ff
 - low-mass X-ray binaries, 324
 - reflection component, 327
 - supersoft sources, 445
 - X-ray pulsars, 57ff
 - accretion powered phase, 61–2
 - accretion torque model, 313–4
 - Be-star companions, 313
 - binary pulsars, 57ff
 - cyclotron line, 57
 - spin evolution, 57ff
 - spin-up rate, 313, 317
 - X-ray power spectra, 313–5
 - X-ray transient, 313ff
 - X-ray transients, 363ff, 369ff
 - Be/X-ray binaries, 99

- binary pulsar
 - magnetic field, 318
 - spin-up rate, 313, 317
- black-hole binaries, 99
- expanding synchrotron bubble model, 372
- jets, 372
- opacity effect, 369, 371
- quiescence, 51–2, 325–6, 333ff
 - radio pulsar activity, 325
- radio
 - counterparts, 369
 - spectrum, 372
- rapid proton process (rp-process), 39
- recurrence time, 51
- recurrent transients, 324
- soft X-ray transients, see Soft X-ray transients
- spots on companion, 352
- superhumps, 352ff
- superluminal motion, 364

Z sources, 302, 306

Zeeman lines, 407–8