

## SUBJECT INDEX

- absorption lines
  - Balmer, 65, 125, 127, 130, 168, 175, 256, 273, 455
  - broad, 272, 314, 476
  - CaII, 58, 162
  - CIV, 482
  - CO, 286
  - HI, 4, 100, 266, 270
  - interstellar, 58, 427
  - low ionization, 270
  - Ly $\alpha$ , 481
  - stellar, 58, 125, 155, 189, 244, 248, 286, 358, 391
  - UV, 247
- absorption systems, 72
  - Ly $\alpha$ , 94, 481, 482
    - column densities, 94
    - environment, 481
    - galaxy halos, 481
    - low redshift, 92
    - metal enrichment, 482
  - Mg II, 425
- abundances, 7, 24, 40, 44, 65, 169, 202
  - evolution, 46, 493
  - M31 halo, 26
  - metallicity-luminosity relation, 65, 181, 449
  - Mg/Fe-luminosity relation, 26
  - Milky Way halo, 24
- AGN, 81, 84, 105, 144, 233, 249, 265, 272, 278, 293, 296, 298, 300, 313–315, 318, 334, 339, 342, 344, 360, 363, 365, 399, 409, 434, 470, 475, 477, 480, 488
  - accretion disks, 266
  - broad-line regions, 297
  - engines, 333, 344
  - formation, 295, 300
  - fueling, 265, 271, 341, 357
  - hidden, 305, 309, 359, 475
  - line diagnostics, 361, 418
  - LINERS, 296, 298
  - near-infrared imaging, 345
  - search, 488
  - Seyfert I, 270, 272, 296, 342, 343
    - infrared-selected, 364
  - Seyfert II, 296–298, 342, 352, 354, 421
    - warm, 298
  - Seyferts, 243, 360, 363
    - disk galaxies, 313
    - interacting, 277, 311, 329–332, 355, 358, 370
    - intermediate, 297
    - nuclei, 347
    - unified schemes, 329–332
    - ZCAT lists, 355
  - spectral index, 342
  - starburst connection, 247, 286, 295, 308, 356
  - triggering, 7, 205, 315, 370, 385
  - ULIR-QSO transition, 313
  - unification, 312
- angular momentum
  - gravitational torques, 27
  - redistribution, 28
  - transport, 271
- astrometry, 47
- binary star evolution, 55
- black holes, 140, 293, 333, 399, 431, 435, 442
  - accretion disks, 311
  - binary, 307
  - detections, 334
- bridges, 2, 3, 61, 72, 77, 83, 105
  - HI, 71, 134
- bugles
  - formation, 293
- bulges, 23, 26
  - boxy, 25, 28, 151, 193
  - counterrotating, 6, 153, 219
  - formation, 6, 24, 26, 423, 432, 490
    - mergers, 28
  - kinematics, 27
  - luminosity profiles, 26
  - rotation, 26, 28
- Butcher-Oemler effect, 8, 126, 128, 394, 399, 405, 447
- catalogs
  - Abell clusters, 398, 399, 401, 410
  - AGN, 330, 355

- Arp peculiar galaxies, 111, 165
- Arp-Madore peculiar galaxies, 277, 278
- galaxies
  - APM, 351
  - Principle Galaxies, 277
- Hickson groups, 69, 368, 375, 376, 383, 412, 414, 415, 418
- Hipparcos, 50
- infrared galaxies
  - 2-Jy, 364
  - QMW, 277
- IRAS*
  - Faint Source, 351
  - Point Source, 59
- Karachentsev double galaxies, 111
- Kraan-Korteweg & Tammann nearby galaxies, 109
- LCRS groups, 128
- redshift
  - CFA, 330
  - ZCAT, 355
- Tully nearby galaxies, 410
- Vorontsov-Velyaminov peculiar galaxies, 111
- cluster galaxies
  - brightest, 195, 471, 474
  - color evolution, 407
  - galaxy formation models, 407
  - K-band Hubble diagram, 407
- ellipticals, 3, 4
- intermediate redshift, 447
- orientations, 410, 413
- clustering
  - hierarchical, 11, 40, 128, 140, 393, 394
  - filaments, 369
  - large-scale, 427
  - statistics, 11, 12
- clusters, 387, 394, 397, 405, 408, 417, 420, 444
  - chemo-dynamical model, 403
  - collapse, 419
  - color gradients, 405
  - environmental effects, 93, 126, 403
  - high redshift, 487
  - irregular, 79
  - mergers in, 8
  - poor, 401
  - rich, 451, 471, 472, 474
  - stochastic forces in, 408
  - substructure, 9, 417
  - evolution, 419
  - x-ray properties, 401, 413, 420
- collisional ring galaxies, 3, 72, 73, 97–104, 134, 194, 283
  - colors, 98, 99
  - IR luminosity, 101
  - metallicity, 98, 102
- color-color diagram, 65, 66
  - FIR, 314
- compact groups, 145, 367–372, 412, 444
  - automated selection, 412
  - crossing times, 370, 376
  - discordant redshifts, 367, 368
  - dwarf members, 379
  - E/S ratio, 369, 371
  - FIR luminosities, 414
  - formation, 369, 371, 372
  - gas content, 371, 414
  - HI morphology, 375–382
  - interactions in, 369
  - luminosities, 370, 415
  - mergers in, 369
  - nuclear activity, 418
  - optical spectra, 418
  - remnants, 370
  - star formation, 416
  - velocity dispersions, 367, 369–372, 385
  - x-ray properties, 368, 369, 371, 376
- cooling flows, 201, 390, 474
- dark matter, 62, 67, 79, 90, 146, 158
  - in clusters, 395
  - in groups, 148, 367, 371
- de Vaucouleurs profile, 3, 26, 28, 160, 349, 423, 435
- disk galaxies, 90, 125, 130, 393, 409, 495
  - B/D ratios, 208, 424, 431
  - barred, 151, 154, 162, 235, 395
  - nuclear structures, 348
- counterrotation, 6, 151–155, 161–164, 391
- early, 151, 196
  - dark halos, 196
  - formation, 1, 9, 130, 141, 454
  - kinematics, 196
- environmental effects, 409
- fine structure, 6
- formation, 153, 317
  - early, 432
  - timescales, 436
- HI, 90, 93, 118
  - line width, 379, 380
- lopsided, 7, 45
  - gas, 78, 79, 93
  - stars, 78, 118–123
- luminosity profiles, 152, 201, 434
- molecular gas, 218, 409
- rotation curves, 90, 113, 138, 383, 434

- Tully-Fisher relation, 118, 121, 141,  
 395, 413, 424, 447, 448, 456  
 velocity distributions, 152, 153, 160,  
 162
- disks  
   counterrotating, 152, 154, 203  
   gas, 151, 154  
   stellar, 157–160  
   density waves, 97, 98, 103, 167  
   formation, 25, 71, 78, 423, 425, 490  
   gas, 142  
   fragility, 6, 48, 73, 117, 140  
   instabilities, 25, 93, 120, 153, 164, 193,  
   385, 431  
   spiral structure, 3, 165  
   tidal, 105, 106  
   thick, 103, 167, 431, 434  
   tidal bars, 106, 133, 142, 159, 205, 437  
   warped, 45, 79, 106, 158, 376
- dust  
   emission, 93, 102, 220, 266, 472, 473  
   PAH, 102, 104  
   extinction, 102, 297, 298, 305, 306,  
   342, 428, 469, 470, 476, 477, 493,  
   497  
   masses, 150, 266  
   temperature, 102, 220  
   tori, 498
- dwarf galaxies, 75, 483  
   accretion of, 24, 28, 47, 76  
   blue compact, 65, 66, 425, 433, 439  
   elliptical, 393  
   environment, 483  
   evolution, 483  
   HI masses, 83  
   irregular, 65, 91, 112, 115  
   Local Group, 52, 57  
   luminosity function, 441  
   M/L ratios, 39  
   M81 Group, 57  
   nearby, 109  
   spheroidal, 52, 115, 393, 397, 427  
   tidal, 3, 61–69, 372  
   dynamics, 67  
   formation, 68  
   metallicity, 65, 69  
   stellar populations, 64  
   survival, 69
- dynamical friction, 1, 9, 41, 44, 87, 166,  
 170, 357, 368, 370, 376, 432
- E+A galaxies, 4, 125–131, 168, 406, 447,  
 453–456  
   environment, 128
- frequency, 130  
 lifetimes, 130  
 morphology, 128  
 origin, 128  
 progenitors, 130, 205, 211  
 selection, 127
- elliptical galaxies, 393, 442, 495  
   ages, 3, 5  
   cD, 27, 173, 176, 183, 404  
   formation, 258  
   centers, 140, 142  
   color-luminosity relations, 5  
   counterrotation, 150–151, 157, 163,  
   203  
   decoupled cores, 4, 143, 150, 161, 169,  
   203  
   Faber-Jackson relation, 3, 394, 447,  
   448  
   formation, 78, 125, 130, 197, 273  
   collapse, 182, 197, 393  
   early, 394, 425, 427, 452, 473, 487  
   mergers, 1–5, 9, 72, 142, 145, 150,  
   157, 167, 169, 173, 174, 176,  
   178, 181, 186, 187, 202, 256,  
   258, 261, 264, 273, 349, 370,  
   371, 399, 421, 450, 455  
   fundamental plane, 185–188, 195, 424,  
   447, 448, 451–453, 455, 456  
   gas & dust, 149, 150, 199  
   high redshift, 444  
   luminosity profiles, 139, 140, 336  
   M/L ratios, 185, 187, 447  
   evolution, 452, 456  
   mass distributions, 189  
   nuclear disks, 150, 169  
   rotation, 26, 27  
   triaxial, 150, 151, 203  
   velocity distributions, 169, 189
- emission lines, 318, 321, 323, 467, 472  
   AGN, 248  
   Balmer, 334  
   Br $\gamma$ , 286, 305  
   broad, 270, 272, 296, 331, 341  
   CO, 59, 65, 93, 100, 227–229, 231–234,  
   265, 267, 268, 270, 271, 281, 282,  
   303, 354, 362, 384, 390, 409, 414  
   extended, 193, 321  
   FeII, 286, 476, 477  
   H $_2$ , 286, 303, 304  
   H $\alpha$ , 63, 102, 151, 155, 199, 219, 220,  
   361, 362, 364, 365, 381, 387–391,  
   416, 418, 469, 479, 480  
   H $\beta$ , 8, 65, 327  
   HCN, 232

- HI, 57, 71, 81, 83, 84, 88, 93, 95, 100,  
     113, 118, 136, 377–381, 390  
 high ionization, 342, 361  
 high redshift, 362  
 HII, 25, 64, 203, 243, 244, 246, 247,  
     285, 306, 326, 453  
 low ionization, 296  
 Ly $\alpha$ , 365, 428, 479  
 maser  
     H<sub>2</sub>O, 334, 335  
     OH, 309  
 molecular, 231–234, 266, 269  
     high density, 268, 271, 306  
 NeII, 305  
 NII, 199, 354, 390, 416, 418  
 OII, 125, 127, 317, 411, 468  
 OIII, 65, 318, 327, 354  
 Pa $\alpha$ , 298, 299  
 Pa $\beta$ , 299  
 recombination, 244, 246, 296, 305  
 SII, 354, 416  
 SIII, 305, 354  
 SiVI, 298, 299  
 starburst diagnostics, 296  
 WR stars, 285  
 x-ray, 287
- field galaxies, 442  
     ellipticals, 4, 256  
     high redshift, 423–428, 431, 440, 441,  
         469  
     volume density, 423, 426–428, 440
- galactic fountain, 58  
 galactic winds, 7, 26, 201, 393  
 galaxies  
     counterrotation, 149–155  
     emission line, 467  
     formation, 23, 61, 69, 163, 173, 181,  
         185, 295  
         Cold Dark Matter, 424  
         early, 440, 495  
         high redshift, 426  
         mergers, 424  
         ongoing, 318  
         trends in, 195  
     high redshift, 497  
     luminosity function, 295, 447  
         evolution, 448, 456  
     M/L ratios, 442, 444, 448, 451  
     star-forming, 296  
 galaxy classification  
     automatic, 16, 388
- Hubble sequence, 1, 6, 7, 9, 90, 141,  
     161–164, 219, 224, 225, 330, 335,  
     339, 387, 388, 393, 436, 489, 491  
     evolution, 491  
     image bimodality, 18, 19  
     K-correction, 16  
 galaxy morphology  
     -density relation, 8, 114, 372, 387, 491  
     high redshift, 14, 15, 394, 426, 431  
     initial conditions, 489
- gas  
     atomic and molecular comparison  
         environment, 224  
         Hubble sequence, 224  
     column density, 90–93, 209, 216, 219,  
         223, 224, 228, 233, 268, 269, 279,  
         280, 343, 409, 481  
     depletion, 228  
     feedback effects, 143  
     gravitational instabilities, 237  
     heating & cooling, 7, 134, 213, 266  
     high velocity clouds, 58  
     hydrodynamic torques, 201  
     infall, 78, 151, 164, 387, 432, 448  
     inflows, 2, 311, 398, 435, 437  
         gravitational torques, 7, 28, 89, 95,  
             143, 206, 207, 357  
         nuclear, 61, 86, 90, 143, 292, 304,  
             352, 357, 384  
     intergalactic, 68, 93, 95, 129, 144, 318  
         metallicity, 94, 482  
     ionized, 64, 65, 95, 150–152, 155, 390  
         counterrotating, 151  
         HII regions, 64, 102, 306, 389  
         kinematics, 67, 68  
         masses, 150, 151, 155  
     metallicity, 93  
     molecular, 7, 64, 65, 91, 92, 95, 100,  
         151, 228, 231, 266, 341, 384, 432  
         cloud collisions, 34  
         cloud compression, 7, 143  
         cloud mass function, 256  
         clouds, 231–235  
         densities, 265, 268, 306  
         H<sub>2</sub>/CO ratio, 90  
         heating, 233  
         intercloud medium, 235, 239, 240,  
             303  
         masses, 7, 90, 154, 265, 266, 268,  
             271, 289  
         morphology, 228  
         nuclear, 289, 293  
         nuclear disks, 73, 89, 90, 231, 234,  
             265, 268, 270, 271, 279, 309,  
             342, 390

- neutral, 61, 81, 83, 89, 93, 100, 116, 132, 151, 169, 384
  - kinematics, 67, 71, 85, 375
  - masses, 64, 65, 76, 77, 79, 83, 86, 129, 154, 378–380
- phase transitions
  - HI to H<sub>2</sub>, 100, 223–225
  - ionization, 91, 143
  - photoionization, 92, 94, 318
- ram pressure, 8, 68, 93, 126, 129, 143, 389, 397
- shocks, 90, 100, 106, 142, 158, 168, 235–238, 303, 352, 389
  - energy dissipation, 304
- turbulence, 34, 113
- x-ray, 68, 90, 94, 143, 342, 371, 473
  - outflow, 142, 143
- globular clusters
  - formation, 293
- gravitational lensing, 317, 441–444, 497
- groups, 81, 116
  - loose, 368, 369
- Gunn-Peterson effect, 95
- halos, 23, 88
  - dark, 93, 432, 442
    - formation, 484
    - masses, 3, 137–139
    - shapes, 158
    - spatial correlations, 484
  - M/L ratios, 44
- stellar, 28
  - accretion of, 2, 24
  - PN kinematics, 27
- Hubble Deep Field, 12, 15, 16, 18–20, 423, 424, 426, 427, 439–444, 459, 467, 468, 485, 491, 498
  - angular correlation functions, 485
- infrared galaxies, 53, 275
  - CO imaging, 227–229
  - CO observations, 275
  - energy sources, 341, 342
- hyperluminous
  - CO observations, 354
  - near-infrared spectroscopy, 354
- infrared spectroscopy, 295
- interacting/merging, 275
- luminous
  - 21 cm-line images, xxiv
  - CO-line images, xxiv
  - mid-infrared images, xxiv
  - optical images, xxiii, xxiv, 290
  - radio continuum images, xxiv
- merger sequence, 227–229, 282
- optical spectroscopy, 295
- starbursts, 243
- ultraluminous, 90, 130, 142, 143, 265–272, 275, 289, 313, 314, 351, 360, 370, 475, 498
  - accretion disks, 265
  - energy sources, 292, 295–300, 313, 314, 343
  - evolution, 349, 350, 364
  - high redshift, 476, 477
  - infrared imaging, 289
  - mergers, 206, 289, 307, 313, 364, 421
  - molecular gas, 294
  - near-infrared H<sub>2</sub> emission, 303
  - near-infrared imaging, 293, 363
  - nuclear interstellar medium, 303
  - nuclear star formation, 305
  - nuclei, 271
  - optical imaging, xxv, xxvi, 289, 290, 292–294
  - spectral classification, 299
  - star clusters, 294
  - starbursts, 287
  - surface brightness profiles, 349
  - warm, 341, 363, 476
  - x-ray properties, 287, 360
- x-ray observations, 342
- interactions, 1, 2, 25, 32, 61, 63, 71, 81, 82, 85, 93, 97, 113, 120, 170, 205, 224, 377, 384, 386, 387, 397, 423, 437, 448, 455, 493, 497
- collisions, 143, 235, 236, 240, 241
- disk galaxies, 8, 67, 97, 194, 277
  - head-on, 134, 283
- elliptical galaxies, 67, 150
- fast, 93, 126, 167, 206, 209, 387, 390, 394, 395, 399
  - evolution of ISM, 210
- field galaxies, 235
- high redshift, 425
- hydrodynamic, 77, 205, 387, 389, 390
- low surface brightness galaxies, 205
- mass transfer, 166
- Milky Way-SMC-LMC, 54
- minor, 71, 75
- protogalaxies, 431
- rate, 84, 97
  - field, 79, 111
  - high redshift, 109
- signatures, 77, 128, 165, 368, 383, 424, 425
  - HI, 2, 61, 71–79, 82, 88, 89, 375, 376
- stripping, 368, 383, 394, 444

- strong, 217, 311, 341
  - high redshift, 317
- Keck Telescope spectroscopy, 273
- King model, 41
- Local Group
  - timing argument, 36
- low surface brightness galaxies, 130, 205, 209
- Lyman break, 426
- Magellanic Cloud, Large
  - infrared sources, 59
  - proper motion, 33
  - star clusters, 175
    - ages, 35
  - stellar populations, 59
- Magellanic Cloud, Small
  - proper motion, 34
  - radial velocities, 31
  - tidal damage, 34
- Magellanic Clouds
  - orbits, 32, 34, 35, 37
- mergers, 1, 90, 127, 128, 143, 170, 173, 222, 225, 227, 228, 261, 368, 387, 391, 395, 423, 441, 444, 447, 448, 475, 493, 497, 499
  - advanced, 77, 78, 256, 292
  - age, 217, 220
  - cannibalism, 258, 400, 403, 471, 474
  - disk galaxies, 1, 73, 140, 142, 157–160, 165, 174, 181, 184, 186, 202, 292
  - dissipative, 293
  - double nuclei, 8, 206, 215, 216, 221, 228, 229, 232, 265–269, 271, 272, 275, 303–305, 308, 309, 349, 353, 358, 424
  - elliptical galaxies, 139, 140, 293
  - gas-rich galaxies, 187, 188, 213, 224, 231, 262, 303
    - feedback, 213
  - high redshift, 11, 425
  - major, 2, 3, 27, 61, 71, 72, 77, 150, 167, 169, 178, 202, 206, 313
    - role of central bulges, 206–208
  - minor, 2, 4, 6, 7, 46, 117–123, 140, 150, 151, 157, 163, 166, 177, 193, 318, 425, 455
  - multiple, 3, 27, 145, 150, 421
  - optical imaging, 358
  - rate, 7, 11–20, 117, 122, 424
    - field, 112
    - high redshift, 18
  - remnants, 3, 89, 143, 253, 293, 370
    - mass profiles, 148
    - shapes & kinematics, 141, 146
  - sequences, 1, 72, 89, 228, 253, 291
  - signatures, 2, 6, 8, 16, 90, 117, 149, 171, 266, 292
    - high redshift, 318
  - starbursts, 220, 358
  - timescale, 12, 14, 292, 441
  - x-ray properties, 358
- Milky Way
  - bar, 25
  - bulge, 24
    - ages, 432
    - carbon stars, 55
    - kinematics, 25, 433
  - dark halo, 31, 37, 54
  - globular clusters, 56
  - high velocity stars, 47
  - moving groups, 24, 47–51
  - rotation curve, 54
  - stellar halo, 47
    - horizontal branch stars, 47
    - kinematics, 24
    - metal-poor, 24
    - retrograde, 48
    - velocity ellipsoid, 24
    - young, 24
- multicolor photometry, 426
- N-body simulations, 3, 25, 41, 84, 85, 88, 105
  - barred galaxies, 348
  - clusters, 403, 408, 419
  - encounters, 62, 133, 137, 205, 394
  - head-on collisions, 283
  - M81 Group, 135
  - mergers, 119, 139, 145, 158
  - protogalaxies, 431
  - restricted, 85, 88, 105
  - Sagittarius Dwarf, 41
  - SMC-LMC-Milky Way, 32, 60
  - smoothed-particle hydrodynamics, 106, 134, 142, 158, 168, 213, 283, 311, 489, 490
  - starburst galaxies, 206, 213
  - sticky particles, 106
- nearby galaxies, 109
  - density, 111
  - distances, 110
- OB associations, 49, 51, 99
- oblate isotropic rotators, 26
- ocular galaxies, 281

- CO line observations, 281
- HI observations, 281
- radio continuum observations, 281
- orbits
  - bars, 25
    - inner Linblad resonance, 133
    - retrograde, 154
  - box, 152
  - tube, 152
- pair-count statistics, 12–14, 20, 423
- pair-density evolution, 14
- peculiar galaxies, 15, 16, 20, 277
  - chain, 19
  - high redshift, 11, 15–18, 109, 432, 440, 473
  - intermediate redshift, 317
- phase mixing, 48, 90, 139, 166, 169
- Plummer potential, 85
- polar ring galaxies, 6, 149
  - Tully-Fisher relation, 136
- quasars, 266, 295, 488
  - broad absorption lines, 476
  - companions, 316, 487
  - counts and evolution, 334
  - double, 435
  - engines, 8, 298, 435
  - forbidden lines, 476
  - formation, 475
  - hidden, 472
  - host galaxies, 8, 311, 312, 316, 318, 398, 399, 431, 477
    - infrared luminous, 350
    - luminosity profiles, 313
    - merger ages, 315
    - mergers, 314
    - stellar populations, 312
  - interacting, 311–318, 370
  - lifetimes, 314
  - optically selected, 298, 314, 341
  - radio loud, 312, 487
  - radio quiet, 312, 313
  - transition objects
    - post-starbursts, 315
    - ULIG, 313
  - triggering, 289, 311, 398, 399, 435
  - Type 2
    - near-infrared properties, 361
    - x-ray, 365
- radio galaxies, 132, 321–328
  - alignment effect, 317
  - compact-steep-spectrum, 318
  - ellipticals, 383
  - extended emission line regions, 323
  - FR I, 359, 386
  - FR II, 312, 318
  - high redshift, 317, 471–474
  - imaging, 324
  - interacting
    - $z \sim 1$ , 317
  - luminosity evolution, 322
  - powerful, 313
    - CO observations, 353
    - merger hypothesis, 353
    - near-infrared imaging, 353
  - radio-to-optical ratios, 383
- relaxation
  - two-body, 336
  - violent, 3, 26, 139, 142
- Sagittarius Dwarf
  - dark halo, 39, 44
  - escape velocity, 44
  - globular clusters, 39
  - half-light radius, 43
  - mass, 45
  - orbit, 41
  - populations, 39
  - proper motion, 41
  - radial velocities, 41–43
  - tidal disruption, 42
- Shapley constellations, 53
- shells, 4, 78, 165–171, 391, 444
  - colors, 167, 168, 170, 191
  - formation, 166–168, 191
  - kinematic, 169
  - phase-wrapped, 166, 168
  - S0 galaxies, 165
  - space-wrapped, 166
  - velocities, 168, 170
- spacecraft
  - ASCA*, 287, 342, 360, 361, 365, 413
  - COBE*, 25, 486
  - Hipparcos*, 33, 47, 48, 50, 51
  - HST*, xxiii, xxiv, 8, 11, 13–20, 58, 97, 99, 103, 109, 125, 128, 131, 139, 174, 175, 181–183, 198, 242, 247, 249, 251–253, 255, 257, 261, 265, 268, 273, 294, 305, 312, 313, 317–319, 322, 326, 333, 335–339, 346–348, 358, 394, 396, 399, 423, 431, 432, 440, 442, 451, 454, 455, 469, 471, 473, 481, 491, 494, 495, 497–499
  - IRAS*, xxv, xxvi, 7, 53, 59, 130, 219–221, 252, 277, 279, 280, 289,

- 290, 292, 295, 298, 314, 315, 341,  
351, 354, 360, 421, 476, 486, 494
- IRIS*, 486
- ISO*, xxiv, 101–104, 282, 296, 300,  
351, 475, 486, 494
- NGST*, 15, 493, 494
- ROSAT*, xxiv, 142, 199, 358, 365, 401,  
420, 421, 473
- SIRTF*, 494, 498
- star clusters
  - abundances, 262
  - ages, 256
  - destruction, 253, 261, 262, 264
  - evolution in mergers, 251
  - globular, 100, 173–184, 432
    - ages, 198, 284
    - colors, 5, 176, 182, 183, 197, 256
    - destruction, 176
    - distribution, 273
    - elliptical hosts, 181, 198, 200
    - formation, 7, 20, 34, 174, 181, 262,  
273, 372
    - galactic, 52
    - kinematics, 178
    - luminosity functions, 253
    - metal-poor, 24, 174–179, 182, 183,  
257
    - metal-rich, 174–179; 182, 183, 256
    - metallicity, 174, 181, 284
    - progenitors, 99, 103, 182
    - properties, 273
    - specific frequencies, 4, 174, 177,  
181–183, 200, 256, 258, 264
    - velocity dispersions, 175
    - young, 174, 175, 273, 497
  - luminosity functions
    - evolution, 263
  - young, 61, 251–259, 261–264
    - abundances, 256
    - ages, 253, 256, 262
    - fading, 263
    - formation, 103, 235, 241, 242
    - luminosity functions, 253, 261, 262
    - masses, 242
- star formation, 63, 65, 68, 98, 125, 143,  
168, 186, 369, 390, 411, 425, 432,  
437, 453, 456, 493, 498
- delayed, 134
- efficiency, 217, 219–222, 225, 228, 238,  
262, 282
- environment, 217, 411
- high redshift, 18, 23, 495
- initial mass function, 130, 273
- massive stars, 226, 235, 238, 271, 295
- merger remnants, 217
- rate, 65, 219, 222, 304, 384, 386, 388,  
389, 425, 428, 469, 473, 497
  - high redshift, 467, 472
- regions, 12, 53, 62, 233, 498
- Schmidt law, 186
- tails, 318, 416
- threshold, 381
- triggering, 214, 222, 277, 497
- starbursts, 16, 18, 20, 26, 84, 90, 142,  
169, 235, 239, 261, 262, 266, 315,  
342, 394, 399, 433, 447, 448, 450,  
471, 473, 477
  - ages, 86, 88, 121, 169
  - duration, 241
  - dwarfs, 243
  - extended, 241
  - high redshift, 425, 497
  - initial mass function, 243–249
    - environment, 249
    - high mass end, 249
    - low mass end, 249
  - luminous infrared galaxies, 246
  - M82-type, 246
  - metallicity dependence, 247
  - Salpeter, 246
  - shape, 248
  - top-heavy, 246
  - universality of, 248
  - Wolf-Rayet galaxies, 247, 248
- Markarian galaxies, 279
  - gas content, 279
- near-infrared line observations, 286
- nuclear, 61, 213, 216, 233, 243, 293,  
341, 384
  - fueling, 357
- radiative avalanche, 356
- relation to active galactic nuclei, 247
- temporal and spatial evolution, 248
- triggering, 2, 7, 19, 64, 71, 72, 78, 81,  
97, 98, 103, 121, 128, 143, 187,  
205, 217, 220, 229, 235–242, 261,  
370, 386, 396
  - mergers, 307
- ultraluminous, 229
- stellar evolution, 97, 98
  - models, 285
    - young starbursts, 285
- stellar populations, 495, 499
  - abundances, 202, 258
  - age-abundance degeneracy, 19
  - ages, 16, 39, 120, 372
  - composite, 64, 316, 464, 465, 497
  - evolution, 99, 316, 326, 425, 450, 453,  
464
    - color, 121, 257, 258, 284, 461



- line index, 284
  - spectral index, 462
- initial mass functions, 247, 273
- intermediate-age, 24, 311, 326
- M/L ratio, 185, 449
- mergers, 202
- metal-poor, 26
- models, 19, 130, 175, 284, 346, 358,
  - 404, 453, 455, 459–465
  - single-burst, 5
- old, 41, 65, 68, 121, 125, 243, 407,
  - 447, 472
- post-starburst, 102, 125, 316
- starburst, 103, 211, 244, 285, 296
- young, 53, 175, 220, 243, 293, 296,
  - 346, 472
- supernovae, 222, 393
  - rate, 384
  - remnants, 386
  - Type II, 477
- surveys
  - IRAS* All-Sky, 289
  - DEEP, 423–425
  - deep
    - MDS, 15
  - emission line galaxies, 468, 479
  - FCRAO Extragalactic CO, 217–219,
    - 221, 223, 224
  - galaxies
    - HI, 71, 78, 109
    - infrared, 297, 315, 486
    - peculiar, 111
    - polar ring, 136
    - UB drop-out, 427
  - LMC NIR, 59
  - MDS, 491
  - morphological, 11, 12
  - photometric, 13
  - protogalaxies, 426
  - radio galaxies, 322, 324
  - redshift, 11, 13, 467
    - CFRS, 14, 17, 18, 424, 425
    - HDF, 440
    - LCRS, 125, 127, 128, 411
    - LDSS, 17
  - x-ray
    - Lynx, 361
    - ROSAT All-Sky, 401
- tails, 2, 3, 61, 63, 67, 72, 77, 86, 89, 105,
  - 137–139, 165, 171, 266, 270, 316,
    - 317, 395, 424, 425
  - fallback, 4, 71, 142
  - HI, 71, 128, 376
    - offset, 3, 143
  - Jeans instability, 68
  - mergers, 128
  - substructure, 3
- three-body problem, 85
- tides
  - debris, 61
  - disruption, 39, 46, 47, 69, 76, 86
  - plumes, 4, 61
  - streams, 44, 47
  - stresses, 40, 41, 44
- ultraviolet background, 92
- virial plane, 185, 195