

Contents

Introduction	1
Normal galactic nuclei: outstanding problems <i>M. Morris</i> . . .	3
 PART I. STELLAR CLUSTER, STAR FORMATION	7
1 Galactic Bulges	9
1.1 The Galactic bulge (Review) <i>R. M. Rich</i>	11
1.2 The bulge stellar population in M31 <i>P. Jablonka, T. Bridges, G. Meylan, A. Sarajedini</i>	19
1.3 First stellar iron abundance measurements in the Galactic center <i>K. Sellgren, J. S. Carr, S. Balachandran</i>	21
1.4 Miras as probes of the Galactic bulge <i>S. M. G. Hughes, R. M. Catchpole, P. A. Whitelock, M. W. Feast</i>	23
1.5 SiO maser sources in the Galactic bulge and a kinematic signature of the bar structure <i>S. Deguchi</i>	25
1.6 Are the Galactic bulge and bar the same ? <i>Y. K. Ng</i>	27
1.7 Secular dynamical evolution of spiral galaxies and the formation of galactic bulges <i>X. Zhang</i>	29
1.8 Evolutionary population synthesis of AGN host galaxy spectra <i>W. Kollatschny, A. Goerdt</i>	31
1.9 Globular clusters within 5° of the Galactic center <i>B. Barbuy, E. Bica, S. Ortolani</i>	33
1.10 The effects of the disk field on the bulge surface brightness <i>Y. C. Andredakis, R. H. Sanders</i>	35
1.11 A photometric study of two galactic bulge globular clusters <i>M. G. Lee, S. C. Yang, J. H. Yang, D. Geisler</i>	37
1.12 Structure of the inner galactic disk and the bulge - first results <i>S. Feltzing</i>	39
1.13 Structural characteristics of spiral bulges <i>Y. -I. Byun</i>	41

1.14 Stellar sources in a field at $l \simeq -45^\circ$, $b \simeq 0^\circ$ of the ISOGAL survey (ISOCAM 7 and 15 microns observations) <i>D. K. Ojha, A. Omont, G. Simon</i>	43
1.15 J- and H-band observations of the Galactic bulge with PANIC <i>S. Matsumoto, Y. Nakada, I. S. Glass</i>	45
1.16 4.5 to 11.7 microns spectrophotometric observations of the Galactic bulge by the MIRS/IRTS <i>K. -W. Chan, T. L. Roellig, T. Onaka, I. Yamamura, T. Tanabe</i>	47
1.17 Bulge and bar: a possible way of their formation <i>S. N. Nuritdinov, E. R. Gaynullia, K. T. Mirtodjieva</i>	49
1.18 Nuclear rise of rotation curves of galaxies <i>Y. Sofue, Y. Tutui, M. Honma, A. Tomita</i>	51
1.19 Mass-to-light ratios of spiral bulges in near-infrared <i>T. Ichikawa, N. Itoh, K. Yanagisawa, Y. Sofue</i>	53
1.20 The color-magnitude relation of bulges <i>N. Itoh, T. Ichikawa</i>	55
2 Galactic Center Star Clusters	57
2.1 ISOCAM CVF observations of the Quintuplet and Object #17 clusters near the Galactic center: diffuse components <i>T. Nagata, K. Kawara, T. Onaka, Y. Kitamura, H. Okuda</i> . .	59
2.2 The stellar content of the Quintuplet cluster <i>D. F. Figer, I. S. McLean, M. Morris, F. Najarro</i>	61
2.3 Mosaic-mapping of very extended objects in (sub)millimetre and near-infrared <i>S. Philipp, R. Zylka</i>	63
2.4 Collisional stellar dynamics around a central galactic black hole <i>M. Freitag, W. Benz</i>	65
2.5 Stellar Mg abundances in the Galactic center <i>S. V. Ramirez, K. Sellgren, D. M. Terndrup, J. S. Carr, S. Balachandran, R. D. Blum</i>	67
2.6 Resolved near-IR survey of the inner Galaxy <i>M. Unavane, G. Gilmore</i>	69
2.7 Chemically decoupled nuclei in disk galaxies <i>O. K. Sil'chenko</i>	71
2.8 Two dimensional decomposition of the luminosity distribution of the spiral galaxies: ESO 598-G009, NGC 1515, and NGC 7456 <i>Y. -J. Choi, B. -G. Park, T. S. Yoon, H. B. Ann</i>	73
2.9 Microlens mapping of disks in active galactic nuclei <i>A. Yonehara, S. Mineshige, J. Fukue, M. Umemura, E. L. Turner</i>	75
2.10 Self-similar viscous growth of the central core of AGN seeds <i>T. Tsuribe</i>	77

2.11	Oscillation of a stellar system with a central massive object <i>M. Taga</i>	79
2.12	Strong gravitational slingshot effect in central parts of stellar and galactic systems <i>J. Anosova</i>	81
2.13	Optical and X-ray variability in NGC 4395 <i>P. Lira, A. Lawrence</i>	83
2.14	Stellar and ionized gas-velocity fields in the central regions of a sample of galaxies <i>C. Del Burgo, S. Arribas, E. Medi- avilla, B. Garcia-Lorenzo</i>	85
3	Star Formation and Starbursts	87
3.1	Long-term star formation at the Galactic center and its effect on the stellar population <i>E. Serabyn</i>	89
3.2	ISO spectroscopy of the Galactic center and starburst nuclei <i>D. Lutz</i>	91
3.3	Circumnuclear regions of active and non-active barred galax- ies <i>J. H. Knapen</i>	93
3.4	Molecular hydrogen emission in galaxies: the case of NGC 6240 <i>E. Egami</i>	95
3.5	High-resolution ISOCAM view of nuclear and circumnuclear starbursts in barred galaxies <i>D. Friedli, H. Wozniak, L. Martinet, D. Pfenniger</i>	97
3.6	AGN variability studies: an agenda for the next millenium ? <i>M. -H. Ulrich</i>	99
3.7	Diffraction-limited IR speckle masking observations of the central regions of Seyfert galaxies <i>M. Wittkowski, Y. Balega, T. Beckert, W. J. Duschl, K. -H. Hoffman, G. Weigelt</i>	103
3.8	Are the stellar populations in starbursts, LINERs and Seyfert galaxies similar ? <i>M. Joly, C. Boisson, D. Pelat, M. Serote Roos, M. J. Ward</i>	105
3.9	Intranight variability of NGC 1275 nucleus in optics implying its central activity <i>I. Pornik, N. Merkulova, L. Metik</i>	107
3.10	X-ray constraints on accretion and starburst processes in galactic nuclei <i>A. Ptak, P. Serlemitsos, T. Yaqoob, R. Mushotzky, Y. Terashima, H. Kunieda</i>	109
3.11	Resolved structure in the nuclear region of the ultraluminous infrared galaxy Mrk 273 <i>J. H. Knapen, S. Laine, J. A. Yates, A. Robinson, A. M. S. Richards, R. Doyon, D. Nadeau</i>	111
3.12	High-resolution NIR imaging of circumnuclear regions in barred galaxies <i>D. Perez-Ramirez, J. H. Knapen</i>	113

3.13	Outflow in the Seyfert galaxy NGC 7319 <i>K. Aoki, G. Kossugi, M. Yoshida, H. Ohtani, A. S. Wilson</i>	115
3.14	Infrared variations of active galaxies: what they tell us <i>I. S. Glass</i>	117
3.15	Narrow-band imaging of the nuclear region of the Seyfert galaxy NGC1068 <i>T. Ishigaki, H. Ohtani, T. Hayashi, S. Ozaki, T. Hattori, H. Sugai, M. Sasaki, K. Aoki, M. Yoshida, E. Watanabe</i>	119
3.16	Bar-driven spiral density waves and accretion of gas-dominated central disks <i>C. Yuan</i>	121
3.17	MACHO RR Lyrae stars in the Galactic bulge: the spatial distribution <i>D. Minniti, C. Alcock, D. Alves, K. Cook, S. Marshall, R. Allsman, T. Axelrod, K. Freeman, B. Peterson, A. Rodgers, K. Griest, M. Lehner, T. Vandehei, A. Becker, M. Pratt, C. Stubbs, A. Tomaney, P. Quinn, D. Bennett, W. Sutherland, D. Welch</i>	123
3.18	Observational data implying the NGC 1275 nucleus complexity <i>I. Pronik</i>	125
3.19	ROSAT HRI observations of the young starburst galaxy NGC 5253 <i>D. K. Strickland, I. R. Stevens</i>	127
3.20	OH/IR stars as signposts for ancient starburst activity in the Galactic center <i>L. O. Sjouwerman, H. J. Habing, H. J. Van Langevelde, M. Lindqvist, A. Winnberg</i>	129
3.21	Atomic ISM in the nuclear starburst regions of M82 & NGC 253 <i>M. S. Yun, P. Ho, K. Y. Lo</i>	131
3.22	Star formation properties of barred galaxies <i>R. Kandalyan, A. Kalloghlyan</i>	133
3.23	The centre of the LMC bar <i>A. Ardeberg, P. Linde, R. Snel, B. Gustafsson, P. E. Nissen</i>	135
3.24	Nuclear fueling by radiative avalanche induced by starbursts <i>M. Umemura, J. Fukue, S. Mineshige</i>	137
3.25	Radiative avalanche driven by a circumnuclear starburst torus <i>K. Ohsuga, M. Umemura</i>	139
3.26	Molecular gas in the nuclear region and the bar of NGC 253 <i>K. Sorai, N. Nakai, N. Kuno, K. Nishiyama</i>	141
3.27	Millimeter-wave continuum observation of galaxies <i>H. Matsuo, N. Kuno, B. Vila-Vilaro, H. Kashihara, T. Kawabata</i>	143
3.28	Three-dimensional distribution of the nuclear mirrors in NGC 1068 <i>M. Kishimoto</i>	145

3.29 Radio recombination lines from starburst galaxies <i>K. R. Anantharamaiah</i>	147
3.30 Tridimensional spectroscopy of ionized gases surrounding the low luminosity Seyfert 2 nucleus of NGC 2273 <i>T. Hayashi, H. Ohtani, H. Sugai, T. Ishigaki, S. Ozaki, T. Hattori, M. Sasaki, K. Aoki, M. Yoshida</i>	149
3.31 Tri-dimensional observation of the superbubble in the starburst galaxy NGC 2782 <i>M. Yoshida</i>	151
3.32 The broad component of He II λ 4686 line in NGC 4151 <i>L. S. Nazarova, P. M. Gondhalekar, N. G. Bochkarev, A. I. Shapovalova</i>	153
3.33 A close look at NGC1068 with adaptive optics: dust torus and micro-spiral structure <i>D. Rouan, O. Lai, D. Alloin, F. Rigaut</i>	155
PART II. NUCLEAR INTERSTELLAR MEDIUM 157	
4 Neutral ISM in the Galactic Center 159	
4.1 Radio continuum and molecular gas in the Galactic center: large-scale structures (Review) <i>Y. Sofue</i>	161
4.2 The Galactic center region filled with molecular shells <i>M. Tsuboi, A. Miyazaki</i>	169
4.3 A large-scale CO imaging of the Galactic center with the Nobeyama 45-m telescope: shell statistics and star formation history <i>T. Hasegawa, T. Oka, F. Sato, M. Tsuboi, A. Yamazaki</i>	171
4.4 The Sagittarius C region mapped in CS(2→1) and (3→2) with the IRAM 30m telescope <i>C. Kramer, J. Staguhn, H. Ungerechts, A. Sievers</i>	173
4.5 Sub-mm [C I] and CO observations of molecular clouds presumably interacting with the G359.54+0.18 nonthermal filaments <i>J. Staguhn, J. Stutzki, S. P. Balm, A. A. Stark, A. P. Lane</i>	175
4.6 Structure of the molecular cloud and star-forming activity in the Sagittarius B2 region <i>F. Sato, T. Hasegawa, J. B. Whiteoak, R. Miyawaki</i>	177

4.7	The CO 2-1/1-0 ratio in the disk and center of the Milky Way Galaxy <i>T. Hasegawa, J. -I. Morino, T. Sawada, T. Handa, K. Sato, T. Oka, S. Sakamoto, K. Sorai, M. Seta, M. Hayashi, L. Bronfman, J. May, R. Booth, L. -Å. Nyman, P. Shaver</i>	179
4.8	Distribution of C ¹⁸ O and HNCO emission in the Sagittarius B2 molecular cloud <i>F. Sato, T. Hasegawa, J. B. Whiteoak, M. Shimizu</i>	181
4.9	Molecular abundances in G1.6-0.025 <i>M. R. Hunt, J. B. Whiteoak, G. L. White, P. A. Jones</i>	183
4.10	Statistical properties of dense molecular clouds in the Galactic center region <i>A. Miyazaki, M. Tsuboi</i>	187
4.11	3 μm spectroscopy of galactic nuclei <i>M. Imanishi, H. Terada, M. Goto, T. Maihara</i>	189
4.12	A molecular cloud interacting with the vertical filaments of the Galactic center radio arc <i>T. Oka, T. Hasegawa, F. Sato, M. Tsuboi, A. Miyazaki</i>	191
4.13	A high velocity molecular cloud near the center of the Galaxy <i>T. Oka, T. Hasegawa, G. J. White, F. Sato, M. Tsuboi, A. Miyazaki</i>	193
4.14	Molecular shell formation by supernova remnants in the Galactic center: what we learn from the case of W44 <i>M. Seta, G. Winnewisser, T. Hasegawa, G. J. White, T. Oka</i>	195
4.15	Dynamics of the Galactic center molecular clouds <i>C. W. Lee, H. M. Lee, K. H. Kwon</i>	197
4.16	A model of the Galactic disk with a central hole <i>J. R. D. Lepine, P. Leroy</i>	201
5	Molecular Gas in Nuclei of Galaxies	203
5.1	Molecular gas in luminous galactic nuclei (Review) <i>N. Z. Scoville, A. J. Baker</i>	205
5.2	Molecular gas and nuclear outflows <i>J. A. Irwin</i>	213
5.3	NRO/OVRO CO(1-0) survey: central regions of nearby spiral galaxies <i>K. Sakamoto, S. K. Okumura, S. Ishizuki, N. Z. Scoville</i>	215
5.4	New high-resolution observations of molecular gas towards the center of spiral galaxies <i>S. Garcia-Burillo</i>	217
5.5	The detection of a gas-rich bar in the interacting galaxy UGC 2855 <i>S. Huettemeister, S. Aalto, W. F. Wall</i>	219

5.6	Mapping the nucleus of NGC1068 in CO(2-1) <i>A. J. Baker, N. Z. Scoville</i>	221
5.7	The central gas consumption timescale in spirals <i>S. Jogee, J. D. P. Kenney</i>	223
5.8	Molecular hydrogen emission from ultraluminous infrared galaxies <i>P. P. Van der Werf</i>	225
5.9	Gas dynamics in the central part of the Sy 1 galaxies: III Zw 2 and Mrk 817 <i>L. C. Popovic, I. Vince, A. Kubičela, S. Salim</i>	227
5.10	Peculiar CO distribution in active spiral galaxies: NCG 4258 and Circinus <i>M. Krause, N. Neininger, M. Elmouttie, K. L. Jones, R. F. Haynes</i>	229
5.11	Dense molecular gas in nearby galaxies <i>Y. Gao, P. M. Solomon</i>	231
5.12	High-resolution CO (1-0) observations of the ringed galaxy NGC 4736 <i>T. Wong, T. Helfer, L. Blitz</i>	235
5.13	High-density-and-temperature circumnuclear molecular torus in M51 <i>S. Matsushita, K. Kohno, B. Vila-Vilaro, R. Kawabe, T. Tosaki</i>	237
5.14	NMA survey of HCN and CO emission from nearby active galaxies <i>K. Kohno, R. Kawabe, K. Sakamoto, S. Ishizuki, B. Vila-Vilaro</i>	239
5.15	Star formation and molecular gas in NGC 404 <i>J. Cepa, B. Vila-Vilaro, N. Nakai, N. Kohno, R. Kawabe</i>	241
5.16	CO mapping of barred spiral galaxies <i>N. Kuno, N. Nakai, K. Nishiyama, K. Sorai, T. Handa, T. Iga</i>	243
5.17	The NRO CO survey of nearby spiral galaxies <i>K. Nishiyama, N. Nakai</i>	245
5.18	Molecular gas in the poststarburst galaxy NGC 7331 <i>T. Tosaki, Y. Shioya</i>	247
5.19	A high resolution CO map of the inner region of M51 <i>S. Aalto, S. Huettemeister, N. Z. Scoville, P. Thaddeus</i>	249
5.20	Molecular cloud properties in the barred galaxy NGC 7479 <i>S. Aalto, S. Huettemeister, M. Das, W. F. Wall</i>	251
5.21	Molecular gas in the center of the elliptical galaxy NGC 759 <i>T. Wiklind, F. Combes, C. Henkel, F. Wyrowski</i>	253
6	Gas Dynamics in the Galactic Center	255
6.1	Non-axisymmetric dynamics in galaxy centers (Review) <i>F. Combes</i>	257

6.2	Efficiency in nuclear fueling <i>M. Noguchi</i>	265
6.3	Physical conditions of the gas in the center of the nearby spiral galaxy IC 342 <i>J. L. Turner</i>	267
6.4	Formation and evolution of gaseous bars <i>D. Friedli</i>	269
6.5	Hydrodynamical simulations as probes for the structure of the galactic center <i>K. Wada, T. Minezaki, K. Sakamoto, H. Fukuda</i>	271
6.6	The Galactic bar and spiral arms <i>O. E. Gerhard, P. Englmaier</i>	273
6.7	Dynamics of the asymmetries at galactic centers <i>F. Masset, M. Tagger</i>	275
6.8	A multi wavelength study of the circumnuclear region of NGC 1365 <i>H. Kristen, A. A. Sandqvist, P. O. Lindblad</i>	277
6.9	Interpreting the main HI and CO ℓ - V features in the Galactic bar from self-consistent stellar and gas dynamical models <i>R. Fux</i>	279
6.10	The dust lanes of the barred galaxy NGC 5383 <i>H. B. Ann, J. M. Kim</i>	281
6.11	Numerical simulations of the formation of AGNs <i>J. P. Sleath, A. H. Nelson</i>	283
6.12	Microlensing and dynamics of the Galactic bulge: the importance of being earnest <i>H. S. Zhao</i>	285
6.13	Central NGC 2146 – a bending instability in the disk of newly formed stars ? <i>E. Griv</i>	287
7	The Central Parsecs of the Milky way	289
7.1	NIR and mm mosaics of the central 100 pc <i>R. Zylka, S. Philipp, W. J. Duschl, P. G. Mezger, T. Herbst, R. Tuff</i>	291
7.2	12.5 μ imaging of Sgr A West with the Keck Telescope <i>E. E. Becklin, M. Morris, D. F. Figer, A. M. Ghez, R. Puetter, B. Jones</i>	293
7.3	Sgr A* in the mid-infrared reference frame: no evidence of an infrared counterpart, or interaction with nearby sources <i>D. Gezari</i>	295
7.4	The 3.4 micron absorption in the Galactic center sources <i>T. Nagata</i>	299
7.5	Tentative detection of far infrared excess in Arp 220 <i>K. -W. Chan, S. H. Moseley, E. Dwek, T. L. Roellig, S. Casey, R. Loewenstein</i>	301

7.6	Dust composition, energetics, and morphology of the Galactic center <i>K. -W. Chan, S. H. Moseley, S. Casey, J. P. Harrington, E. Dwek, R. Loewenstein, F. Varosi, W. Glaccum</i>	303
7.7	A search for [Ne II] 12.8 micron line emission from Galactic ultracompact H II regions <i>H. Matsuhara, H. Takahashi, H. Watarai</i>	305
7.8	Particle cascades in Sgr A*: the possibility of observing their γ -ray signature <i>S. Markoff, F. Melia, I. Sarcevic</i>	307
7.9	Far-infrared emission and gas to dust ratio in discs and central regions of galaxies <i>Y. D. Mayya, T. N. Rengarajan</i>	309
7.10	Confirmation of a MIR source near Sgr A* <i>A. S. Cotera, M. W. Werner, P. P. Plavchan</i>	311
7.11	Inside the central cavity <i>P. G. Mezger, S. Philipp</i>	313
7.12	The Galactic center – a laboratory for AGN <i>W. J. Duschl</i>	315
7.13	The Sgr A East HII complex and associated features <i>K. I. Uchida, M. Morris, E. Serabyn, D. Fong, T. Meseroll</i>	317
7.14	Gaseous accretion flows in the inner parsec of the Galaxy <i>R. Coker, F. Melia</i>	319
7.15	The Fourier analysis of the observed velocity field of gas in the inner 1.5 pc of the Galaxy <i>A. M. Fridman, V. V. Lyakhovich, O. V. Khoruzhii, O. K. Sil'chenko</i>	321
7.16	A possibility of direct determination of the star phase density in the Galactic nuclear center <i>A. M. Fridman, E. V. Polyachenko, V. L. Polyachenko</i>	325
7.17	A possibility of measurement of distance and proper motion of galactic sources by using a differential VLBI method of VERA <i>O. Kameya, T. Sasao, M. Miyoshi</i>	327
8	Magnetic and High-Energy Phenomena	329
8.1	Magnetic phenomena in galactic nuclei (Review) <i>M. Morris</i>	331
8.2	Magnetic fields and black holes in galactic nuclei <i>R. D. Blandford</i>	341
8.3	Submillimeter polarimetry of Sagittarius A <i>G. Novak, J. L. Dotson, T. Renbarger, C. D. Dowell, R. H. Hildebrand, D. A. Schleuning</i>	349
8.4	Properties of synchrotron emission and magnetic fields in the central region of M31 <i>P. Hoernes, R. Beck, E. M. Berkhuijsen</i>	351
8.5	Radio polarimetric study of the Galactic center threads <i>C. C. Lang, M. Morris</i>	353

8.6	Magnetic reconnection as the origin of superhot plasmas in the Galactic center <i>T. Yokoyama, S. Tanuma, T. Kudoh, K. Shibata</i>	355
8.7	Magnetospheric structure filled with relativistic plasma jets/winds <i>S. Nitta</i>	357
8.8	On collimation of the outflows in force-free magnetospheres <i>I. Okamoto</i>	359
8.9	MHD simulations of jets from accretion disks: nonsteady jets vs. steady jets <i>T. Kudoh, K. Shibata, R. Matsumoto</i>	361
8.10	Three-dimensional global MHD simulations of jet formation in active galactic nuclei <i>R. Matsumoto, K. Shibata</i>	363
8.11	Magnetic avalanche model of mass supply in active galactic nuclei <i>T. Kuwabara, R. Matsumoto, K. Shibata</i>	365
8.12	MHD accretion in a black hole magnetosphere <i>M. Takahashi</i>	367
8.13	The dynamo effect in magnetohydrodynamic accretion onto a rotating black hole <i>M. Egi, A. Tomimatsu, M. Takahashi</i>	369
8.14	Magnetic fields in star-forming regions of our Galaxy <i>B. Hutawarakorn, R. J. Cohen</i>	371

PART III. BLACK HOLES AND CENTRAL ACTIVITY 373

9	Black Holes in Galaxies	375
9.1	HST detections of massive black holes in the centers of galaxies (Review) <i>H. C. Ford, Z. I. Tsvetanov, L. Ferrarese, W. Jaffe</i>	377
9.2	Cores or cusps in elliptical galaxies: luminosity or environment? <i>R. S. De Jong, R. L. Davies, R. F. Minchin, J. R. Lucey, J. Steel</i>	385
9.3	A massive BH in the edge-on E/S0 galaxy NGC 4342 <i>F. Van den Bosch, N. Cretton</i>	387
9.4	Nuclear gas kinematics of NGC 7052 and IC 1459 from HST/FOS spectra <i>R. Van der Marel</i>	389
9.5	The “double nucleus” of M31 in J, H, and K <i>P. Hinz, K. Hege, D. McCarthy, M. Lloyd-Hart, F. Melia</i>	391
9.6	Dynamical models of NGC 3115 <i>E. Emsellem, H. Dejonghe</i>	393
9.7	High-resolution 22 GHz continuum observations of NGC 4258 <i>J. R. Herrnstein</i>	395
9.8	Bars and black holes <i>E. Emsellem</i>	397
9.9	Extended UV emission in NGC 6251 <i>P. Crane, J. Vernet</i>	399

9.10	The cause of the spectral turnover in the GPS source 0108+388: free-free absorption or SSA? <i>J. M. Marr, F. Crawford III, G. B. Taylor</i>	401
9.11	Global VLBI observations of the central region in NGC 3079 <i>S. Satoh, M. Inoue, K. M. Shibata, S. Kameno, V. Migenes, N. Nakai, P. J. Diamond</i>	403
9.12	Global disk oscillations and kinematics of mega-maser sources <i>A. T. Okazaki</i>	405
9.13	Story of the discovery of a massive black hole in NGC 4258 <i>M. Miyoshi</i>	407
9.14	A simple mass estimate for central black holes in cuspy galaxies <i>S. De Rijcke, V. De Bruyne, H. Dejonghe, A. Mathieu</i>	409
9.15	Theoretical method for treating force-free black hole magnetosphere in non-stationary and non-axisymmetric state <i>T. Uchida</i>	411
9.16	A sub-parsec accretion disk in NGC 4261 <i>D. L. Jones, A. E. Wehrle</i>	413
9.17	Accretion disk winds driven by the disk radiation field under radiation drag <i>Y. Tajima, J. Fukue</i>	415
9.18	Galactic winds in active galaxies <i>S. Veilleux, J. Bland-Hawthorn, G. Cecil, P. Shopbell</i>	417
10	Case for Black Hole in the Galactic Center	419
10.1	The nuclear star cluster of the Milky Way: star formation and central dark mass (Review) <i>R. Genzel, A. Eckart</i>	421
10.2	High proper motions in the vicinity of Sgr A*: unambiguous evidence for a massive central black hole <i>A. M. Ghez, B. L. Klein, C. McCabe, M. Morris, E. E. Becklin</i>	433
10.3	Progress toward a trigonometric parallax of Sgr A* <i>M. J. Reid, A. C. S. Readhead, R. Vermeulen, R. Treuhaft</i>	435
10.4	Multi-wavelength VLBA mapping of Sgr A* <i>Z. -Q. Shen, K. Y. Lo, J. -H. Zhao, P. Ho</i>	437
10.5	Short-term variability of Sagittarius A* at millimeter wave- lengths <i>T. Tsutsumi, T. Kawabata, A. Miyazaki, M. Tsuboi</i>	439
10.6	Evaporating stars at galactic centers ? <i>G. Meynet, N. Mowlavi, D. Schaerer, M. Pindao</i>	441
10.7	Absorption columns with bright X-ray sources near the Galac- tic center: mass estimation in the Galactic center region <i>M. Sakano, M. Mishiuchi, Y. Maeda, K. Koyama, J. Yokogawa</i>	443

10.8 A massive black hole in the active galaxy NGC 6251 <i>L. Ferrarese, H. C. Ford, W. Jaffe</i>	445
10.9 Dynamical constraints on alternatives to massive black holes in galactic nuclei <i>E. Maoz</i>	447
11 Black-Hole Powering of AGN and Jets	449
11.1 Black holes and galaxy centers (Review) <i>D. Richstone</i>	451
11.2 The nature of compact radio cores in galaxies <i>H. Falcke</i>	459
11.3 The black hole grazer <i>Y. Taniguchi, O. Kaburaki</i>	461
11.4 Demographics of nuclear activity in nearby galaxies <i>L. C. Ho, A. V. Filippenko, W. L. W. Sargent</i>	463
11.5 Pregalactic production of heavy elements by quasars <i>S. Collin, J. -M. Hure</i>	465
11.6 Spectral monitoring of AGN at the 6 meter telescope <i>N. G. Bochkarev, A. I. Shapovalova, A. N. Burenkov, V. V. Vlasyuk</i>	467
11.7 Signature of accretion disks in active galactic nuclei <i>A. Koratkar</i>	469
11.8 High collimation of electron-positron pair jets proceeding to radio jets <i>M. Kondo</i>	471
11.9 Jets from time-dependent accretion flows onto a black hole <i>K. Nobuta, T. Hanawa</i>	473
11.10 The propagation of fast magnetoacoustic waves near a rotating black hole <i>J. Abe, M. Yokosawa</i>	475
11.11 OJ 287 – a system with a binary black hole <i>H. J. Lehto</i>	477
11.12 X-ray emission from LINERs observed with ASCA <i>Y. Terashima, H. Kunieda, P. Serlemitsos, A. Ptak</i>	479
11.13 Gravitational waves generated by globular cluster systems collapse <i>R. Capuzzo-Dolcetta, P. Micocchi</i>	481
11.14 Massive black hole binaries in galactic nuclei <i>J. Makino</i>	483
11.15 The effect of a central massive black hole on the gas fueling <i>H. Fukuda, A. Habe, K. Wada</i>	485
11.16 On the origin of density cusp in galactic nuclei with central black hole <i>T. Nakano, T. Fukushige, J. Makino</i>	487
11.17 Radio emission from low-luminosity active galactic nuclei <i>S. D. Van Dyk, L. C. Ho</i>	489
11.18 The magnetic switch and the FR I/FR II break <i>D. L. Meier, P. Godon, S. Edgington, D. G. Payne, K. R. Lind</i>	491
12 Summary	493
12.1 The central regions of the Galaxy and galaxies: a brief summary <i>F. Combes</i>	495

CONTENTS

xvii

Subject Index	501
Source Index	507
Author Index	511
List of Participants	517