

CURRICULUM VITAE

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Education

University of Michigan	Ph.D. 1992	Astronomy	1987 – 1992
Princeton University		Physics	1985 – 1986
Massachusetts Institute of Technology	S.B. 1985	Physics	1981 – 1985

Employment

Professor	Department of Astronomy Case Western Reserve University	2012 –
Professor	Department of Astronomy	2009 – 2012
Associate Professor	University of Maryland	2003 – 2009
Assistant Professor	College Park	1998 – 2003
Research Fellow	Department of Physics and Astronomy Rutgers University	1997 – 1998
Carnegie Fellow	Department of Terrestrial Magnetism Carnegie Institution of Washington	1995 – 1997
Research Associate	Institute of Astronomy University of Cambridge	1992 – 1995

Other Appointments

Adjunct Professor, Department of Astronomy, Case Western Reserve U., 2009 – 2012
JSI Fellow, Joint Space-Science Institute, U. Maryland & NASA GSFC, 2011 – 2012
Adjunct Professor, Department of Astronomy, University of Maryland, 2012 –

Research Interests

Galaxy formation and evolution, LSB galaxies, the missing mass problem, and cosmology

Professional Societies — IAU, AAS, DDA

Publications in Refereed Journals

“The Stellar Masses of Disk Galaxies and the Calibration of Color–Mass-to-Light Ratio Relations”

McGaugh, S.S., & Schombert, J.M. 2013, *AJ*, submitted (arXiv:1303.0320)

“Galaxy Cluster Bulk Flows and Collision Velocities in QUMOND”

Katz, H., McGaugh, S.S., Teuben, P., & Angus, G.W. 2013, *ApJ*, in press

“Discrete clouds of neutral gas between the galaxies M31 and M33”

Wolfe, S.A., Pisano, D.J., Lockman, F.J., McGaugh, S.S., & Shaya, E.J. 2013, *Nature*, **497**, 224–226

“Andromeda Dwarfs in Light of Modified Newtonian Dynamics”

McGaugh, S.S. & Milgrom, M. 2013, *ApJ*, **766**, 22

“Modified Newtonian Dynamics (MOND): Observational Phenomenology and Relativistic Extensions”

Famaey, B., & McGaugh, S.S. 2012, *Living Reviews in Relativity*, **15**, 10 [invited review]

“A QUMOND galactic N-body code I: Poisson solver and rotation curve fitting”

Angus, G.W., van der Heyden, K., Famaey, B., Gentile, G., McGaugh, S.S., & de Blok, W.J.G. 2012, *MNRAS*, **421**, 2598–2609

“The Baryonic Tully-Fisher Relation of Gas Rich Galaxies as a Test of LCDM and MOND”

McGaugh, S.S. 2012, *AJ*, **143**, 40

“Stellar Populations and the Star Formation Histories of LSB Galaxies: I. Optical and H-alpha Imaging”

Schombert, J.M., Maciel, T., & McGaugh, S.S. 2011, *Advances in Astronomy*, **2011**, 143698

“A Novel Test of the Modified Newtonian Dynamics with Gas Rich Galaxies”

McGaugh, S.S. 2011, *Phys. Rev. Lett.*, **106**, 121303

“Local Group Dwarf Spheroidals: Correlated Deviations from the Baryonic Tully-Fisher Relation”

McGaugh, S.S., & Wolf, J. 2010, *ApJ*, **722**, 248–261

- “Contradiction between strong lensing statistics and a feedback solution to the cusp/core problem”
Chen, D.-M., & McGaugh, S.S. 2010, *RAA*, **10**, 1215–1222
- “Testing Modified Newtonian Dynamics with Rotation Curves of Dwarf and Low Surface Brightness Galaxies”
Swaters, R.A., Sanders, R.H., & McGaugh, S.S. 2010, *ApJ*, **718**, 380–391
- “Comparing the Dark Matter Halos of Spiral, Low Surface Brightness and Dwarf Spheroidal Galaxies”
Walker, M.G., McGaugh, S.S., Mateo, M., Olszewski, E., & Kuzio de Naray, R. 2010, *ApJ*, **717**, L87–L91
- “The Baryon Content of Cosmic Structures”
McGaugh, S.S., Schombert, J.M., de Blok, W.J.G., & Zagursky, M.J. 2010, *ApJ*, **708**, L14–L17
- “The Baryonic Tully-Fisher Relation and its Implication for Dark Matter Halos”
Trachternach, C., de Blok, W.J.G, McGaugh, S.S., van der Hulst, J.M., & Dettmar, R.-J. 2009, *A&A*, **505**, 577–587
- “Kinematic and Photometric Evidence for a Bar in NGC 2683”
Kuzio de Naray, R.K., Zagursky, M.J., & McGaugh, S.S. 2009, *AJ*, **138**, 1082–1089
- “A First Attempt to Calibrate the Baryonic Tully-Fisher Relation with Gas-Dominated Galaxies”
Stark, D.V., McGaugh, S.S., & Swaters, R.A., *AJ*, **138**, 392–411
- “Chandra Observations of Nuclear X-ray Emission from Low Surface Brightness Galaxies”
Das., M., Reynolds, C.S., Vogel, S.N., McGaugh, S.S., & Kantharia, N.G. 2009 *ApJ*, **693**, 1300–1305
- “Constraining the NFW Potential with Observations and Modeling of LSB Galaxy Velocity Fields”
Kuzio de Naray, R., McGaugh, S.S., & Mihos, J.C. 2009 *ApJ*, **692**, 1321–1332
- “VIMOS-VLT Integral field kinematics of the Giant LSB galaxy ESO 0323-G064”
Coccatto, L., Swaters, R.A., Rubin, V.C., D’Odorico, S., & McGaugh, S.S. 2008, *A&A*, **490**, 589–600
- “Milky Way Mass Models and MOND”
McGaugh, S.S. 2008, *ApJ*, **683**, 137–148

- “Mass Models of Low Surface Brightness Galaxies with High Resolution Optical Velocity Fields”
Kuzio de Naray, R., McGaugh, S.S., & de Blok, W.J.G. 2008, *ApJ*, **676**, 920–943
- “The Collision Velocity of the Bullet Cluster in Conventional and Modified Dynamics”
Angus, G.W., & McGaugh, S.S. 2008, *MNRAS*, **383**, 417–423
- “The AGN and Gas Disk in the Low Surface Brightness Galaxy PGC045080”
Das, M., Kantharia, N., Ramya, S., Prabhhu, T.P., McGaugh, S.S., & Vogel, S.N. 2007, *MNRAS*, **379**, 11–20
- “The Rotation Velocity Attributable to Dark Matter at Intermediate Radii in Disk Galaxies”
McGaugh, S.S., de Blok, W.J.G., Schombert, J.M., Kuzio de Naray, R., & Kim, J.H. 2007, *ApJ*, **659**, 149–161
- “CO Detection and Millimeter Continuum Emission from Low Surface Brightness Galaxies”
Das, M., O’Neil, K., Vogel, S.N., & McGaugh, S.S. 2006, *ApJ*, **651**, 853–860
- “High Resolution Optical Velocity Fields of 11 Low Surface Brightness Galaxies”
Kuzio de Naray, R., McGaugh, S.S., de Blok, W.J.G., & Bosma, A. 2006, *ApJS*, **165**, 461–479
- “The Compression of Dark Matter Halos by Baryonic Infall”
Sellwood, J.A., & McGaugh, S.S. 2005, *ApJ*, **634**, 70–76
- “The Balance of Dark and Luminous Mass in Rotating Galaxies”
McGaugh, S.S. 2005, *Phys. Rev. Lett.*, **95**, 171302
- “The Baryonic Tully-Fisher Relation of Galaxies with Extended Rotation Curves and the Stellar Mass of Rotating Galaxies”
McGaugh, S.S. 2005, *ApJ*, **632**, 859–871
- “The Baryonic Tully Fisher Relation”
Gurovich, S., McGaugh, S.S., Freeman, K.C., Jerjen, H. Staveley-Smith, L., de Blok, W.J.G. 2004, *PASA*, **21**, 412–414
- “Oxygen Abundances and Chemical Evolution in Low Surface Brightness Galaxies”
Kuzio de Naray, R., McGaugh, S.S., & de Blok, W.J.G. 2004, *MNRAS*, **355**, 887–898
- “Confrontation of MOND Predictions with WMAP First Year Data”
McGaugh, S.S. 2004, *ApJ*, **611**, 26–39

- “The Acceleration Scale in Disk Galaxy Dynamics: Disk Mass and the Dark Matter Distribution”
McGaugh, S.S. 2004, *ApJ*, **609**, 652–666
- “Simulating Observations of Dark Matter Dominated Galaxies: Towards the Optimal Halo Profile”
de Blok, W.J.G., Bosma, A., & McGaugh, S.S. 2003, *MNRAS*, **340**, 657–678
- “A Limit on the Cosmological Mass Density and Power Spectrum from the Rotation Curves of Low Surface Brightness Galaxies”
McGaugh, S.S., Barker, M.K., & de Blok, W.J.G. 2003, *ApJ*, **584**, 566–576
- “Modified Newtonian Dynamics as an Alternative to Dark Matter”
Sanders, R.H., & McGaugh, S.S. 2002, *ARA&A*, **40**, 263–317
- “High-Resolution Rotation Curves of Low Surface Brightness Galaxies: Mass Models”
de Blok, W.J.G., McGaugh, S.S., & Rubin, V.C. 2001, *AJ*, **122**, 2396–2428
- “High-Resolution Rotation Curves of Low Surface Brightness Galaxies: Data”
McGaugh, S.S., Rubin, V.C., & de Blok, W.J.G. 2001, *AJ*, **122**, 2381–2395
- “Mass Density Profiles of LSB Galaxies”
de Blok, W.J.G., McGaugh, S.S., Bosma, A., & Rubin, V.C. 2001, *ApJ*, **552**, L23–L26
- “Gas Mass Fractions and the Evolution of LSB Dwarf Galaxies”
Schombert, J.M., McGaugh, S.S., & Eder, J.A. 2001, *AJ*, **121**, 2420–2430
- “BOOMERanG Data Suggest a Purely Baryonic Universe”
McGaugh, S.S. 2000, *ApJ*, **541**, L33–36
- “The Baryonic Tully-Fisher Relation”
McGaugh, S.S., Schombert, J.M., Bothun, G.D., & de Blok, W.J.G. 2000, *ApJ*, **533**, L99–L102
- “Star Formation and Tidal Encounters with the Low Surface Brightness Galaxy UGC 12695 and Companions”
O’Neil, K., Verheijen, M.A.W., & McGaugh, S.S. 2000, *AJ*, **119**, 2154–2165
- “Distinguishing Between CDM and MOND: Predictions for the Microwave Background”
McGaugh, S.S. 1999, *ApJ*, **523**, L99–L102
- “The Molecular ISM in Low Surface Brightness Disk Galaxies”
Mihos, J.C., Spaans, M., & McGaugh, S.S. 1999, *ApJ*, **515**, 89–96

- “HST WFPC-2 Imaging of UGC 12695: A Remarkably Unevolved Galaxy at Low Redshift”
O’Neil, K., Bothun, G. D., Impey, C. D., & McGaugh, S. 1998, *AJ*, **116**, 657–672
- “Testing Modified Newtonian Dynamics with Low Surface Brightness Galaxies — Rotation Curve Fits”
de Blok, W. J. G., & McGaugh, S. S. 1998, *ApJ*, **508**, 132–140
- “Testing the Hypothesis of Modified Dynamics with Low Surface Brightness Galaxies and Other Evidence”
McGaugh, S. S., & de Blok, W. J. G. 1998, *ApJ*, **499**, 66–81
- “Testing the Dark Matter Hypothesis with Low Surface Brightness Galaxies and Other Evidence”
McGaugh, S. S., & de Blok, W. J. G. 1998, *ApJ*, **499**, 41–65
- “The Dark and Baryonic Matter Content of Low Surface Brightness Galaxies”
de Blok, W. J. G., & McGaugh, S. S. 1997, *MNRAS*, **290**, 533–552
- “Low-Surface-Brightness Galaxies: Hidden Galaxies Revealed”
Bothun, G., Impey, C., & McGaugh, S. 1997, *PASP*, **109**, 745–758
- “Gas Mass Fractions and the Evolution of Spiral Galaxies”
McGaugh, S. S., & de Blok, W. J. G. 1997, *ApJ*, **481**, 689–702
- “Dynamical Stability and Environmental Influences in Low Surface Brightness Disk Galaxies”
Mihos, J. C., McGaugh, S. S., & de Blok, W. J. G. 1997, *ApJ*, **477**, L79–L83
- “HI Observations of Low Surface Brightness Galaxies: Probing Low Density Galaxies”
de Blok, W. J. G., McGaugh, S. S., & van der Hulst, J. M. 1996, *MNRAS*, **283**, 18–54
- “Could a Local Group X-ray Halo Affect the X-ray and Microwave Backgrounds?”
Pildis, R. A., & McGaugh, S. S. 1996, *ApJ*, **470**, L77–L79
- “Does Low Surface Brightness Mean Low Density?”
de Blok, W. J. G., & McGaugh, S. S. 1996, *ApJ*, **469**, L89–L92
- “Cosmological Constant”
McGaugh, S. S. 1996, *Nature*, **381**, 483

- “The Number, Luminosity, and Mass Density of Spiral Galaxies as a Function of Surface Brightness”
McGaugh, S. S. 1996, *MNRAS*, **280**, 337–354
- “Galaxy Selection and the Surface Brightness Distribution”
McGaugh, S. S., Bothun, G. D., & Schombert, J. M. 1995, *AJ*, **110**, 573–580
- “The Morphology of Low Surface Brightness Disk Galaxies”
McGaugh, S. S., Schombert, J. M., & Bothun, G. D. 1995, *AJ*, **109**, 2019–2033
- “The Tully-Fisher Relation for Low Surface Brightness Galaxies — Implications for Galaxy Evolution”
Zwaan, M. A., van der Hulst, J. M., de Blok, W. J. G., & McGaugh, S. S. 1995, *MNRAS*, **273**, L35–L38
- “The Contribution of Low Surface Brightness Galaxies to Faint Galaxy Number Counts”
Ferguson, H. C., & McGaugh, S. S. 1995, *ApJ*, **440**, 470–484
- “Oxygen Abundances in Low Surface Brightness Disk Galaxies”
McGaugh, S. S. 1994, *ApJ*, **426**, 135–149
- “Spatial Distribution of Low Surface Brightness Galaxies”
Mo, H. J., McGaugh, S. S., & Bothun, G. D. 1994, *MNRAS*, **267**, 129–140
- “A Possible Local Counterpart to the Excess Population of Faint Blue Galaxies”
McGaugh, S. S. 1994, *Nature*, **367**, 538–541
- “Structural Characteristics and Stellar Composition of Low Surface Brightness Disk Galaxies”
McGaugh, S. S., & Bothun, G. D. 1994, *AJ*, **107**, 530–542
- “Star Formation Thresholds in Low Surface Brightness Galaxies”
van der Hulst, J. M., Skillman, E. D., Smith, T. R., Bothun, G. D., McGaugh, S. S., & de Blok, W. J. G. 1993, *AJ*, **106**, 548–559
- “The Small Scale Environment of Low Surface Brightness Disk Galaxies”
Bothun, G. D., Schombert, J. M., Impey, C. D., Sprayberry, D., & McGaugh, S. S. 1993, *AJ*, **106**, 530–547
- “A Catalog of Low Surface Brightness Galaxies: List II”
Schombert, J. M., Bothun, G. D., Schneider, S. E., & McGaugh, S. S. 1992, *AJ*, **103**, 1107–1133

“HII Region Abundances: Model Oxygen Line Ratios”

McGaugh, S. S. 1991, *ApJ*, **380**, 140–150

“Stellar Populations in Shell Galaxies”

McGaugh, S. S., & Bothun, G. D. 1990, *AJ*, **100**, 1073–1085

“The Geometry, Composition, and Mass of the Crab Nebula”

MacAlpine, G. M., McGaugh, S. S., Mazzarella, J. M., & Uomoto, A. 1989, *ApJ*, **342**, 364–378

“An Investigation of the Efficiencies of Various Buffer Gases in Na-Xe Spin Exchange”

McGaugh, S. S., Musolf, M., Wu, Z., & Happer, W. 1987, *Physics Letters A*, **120**, 124–128

Book Reviews, Other Articles, and Notes

Book Reviews

“The Cosmic Perspective” (ASTR 100 text)

by Bennett, Donahue, Schneider, Voit (3rd edition, Sept. 2002)

Conference Summaries:

“Gravitational Dynamics: Universal Twists”

McGaugh, S.S. 1995, *Nature*, **377**, 386

Scientific Perspectives:

“Seeing Through Dark Matter”

McGaugh, S.S. 2007, *Science*, **317**, 607-608

Articles for the Popular Press:

“Modified Newtonian Dynamics”

McGaugh, S.S. & Schulman, E. 2000, *Mercury*, **29**(2), 8

“A Few Steps Back On The Decision Tree”

McGaugh, S.S. *Futureframe*, December 2000 (translated by Phillip Helbig),
<http://www.morgenwelt.de/wissenschaft/001205-gravitation.htm>

“Mond Over Matter”

McGaugh, S.S. *Astronomy Now*, January 2002, pp. 63-65

“Through a Universe Darkly”

McGaugh, S.S. 2006 Inagural *Letter from a Contrarian* for it Cosmic Controversy
<http://cosmiccontroversy.com/letterfromcontrarian/>

Invited Talks

Invited Conference Talks & Reviews

1. “The Baryonic Tully-Fisher Relation”
04/01/12, Greenbank, WV: *Global Properties of HI in Galaxies*
2. “The Trials and Tribulations of Modern Cosmology: The Good, the Bad, and the Just Plain Ugly”
05/06/11, London, Ontario: *Evidential Reasoning in Cosmology*
3. “The Baryon Content of Cosmic Structures”
07/23/10, Paris: *The Standard Model of the Universe: Theory and Observations*
tandard Model of the Universe: Theory and Observations 06/28/10, Strasbourg:
Modified Gravity Approaches to the Dark Sector
4. “Baryons and Their Halos”
10/19/09, Malta: *Hunting for the Dark: The Hidden Side of Galaxy Formation*
5. “Star Formation in Gas Rich Low Surface Brightness Galaxies”
09/21/09, NRAO, Charlottesville: *Assembly, Gas Content and Star Formation History of Galaxies*
6. “The core-cusp dilemma”
07/28/09, University of Michigan: *Extreme Star Formation in Dwarf Galaxies*
7. “Baryonic Tully-Fisher relation”
07/27/09, University of Michigan: *Extreme Star Formation in Dwarf Galaxies*
8. “Baryonic Masses from Rotation Curves”
06/19/09, Queens University, Kingston, Ontario: *Unveiling the Mass — Extracting and Interpreting Galaxy Masses*
9. “Astronomical and Experimental tests of MOND”
05/20/09, Case Western Reserve University, Cleveland: *Workshop on Tests of Gravity and Gravitational Physics*

10. “Systematic Properties of Galaxy Dynamics”
04/02/09, University of Maryland: *Shedding Light on Dark Matter*
11. “The Baryonic and Dark Matter Distribution of the Milky Way”
and “The Cusp-Core Problem”
03/12/09, Case Western Reserve University, Cleveland: *Detecting Dark Matter in the Milky Way*
12. “Scaling Relations in Dim Galaxies: from the Big and Bright to the Faintest of the Tiny”
08/27/07, University of Michigan, Ann Arbor: *The Globular Clusters — Dwarf Galaxies Connection*
13. “The Halo by Halo Missing Baryon Problem”
06/27/07, Cardiff: IAU Symposium 244: *Dark Galaxies & Lost Baryons*
14. “The Connection Between Dark and Luminous Matter”
03/22/07, UC Irvine: *Astrophysical Probes of the Nature of Dark Matter*
15. “Balance of Dark and Luminous Mass in Rotating Galaxies”
10/05/06, Kavli Institute of Theoretical Physics, University of California, Santa Barbara: *Applications Of Gravitational Lensing: Unique Insights Into Galaxy Formation And Evolution*
16. “Empirical Constraints on Halo Profiles from Rotation Curves”
05/19/06, Las Cruces, New Mexico: *Galaxies in the Cosmic Web*
17. “Observational Constraints on the Acceleration Discrepancy Problem”
04/20/06, Royal Observatory, Edinburgh: *Alternative Gravities & Dark Matter Workshop*
18. “Mass discrepancies in the Universe: missing mass or new physics?”
10/01/05, University of Michigan: *Dark Matter in the Universe*
19. “Constraints on the mass profiles of spiral galaxies”
07/05/05, Institut d’Astrophysique de Paris: *Mass Profiles and Shapes of Cosmological Structures*
20. “Luminous and Dark Mass in Spiral Galaxies”
06/28/05, Ascona, Switzerland: *The Formation of Disk Galaxies*
21. “Mass Distributions from Rotation Curves”
06/10/04, Hebrew University: *Galaxy Formation Workshop*

22. “Dark Matter Halo Concentrations”
06/08/04, Hebrew University: *Galaxy Formation Workshop*
23. “Are Cuspy Halos Viable?”
2002, U. Chicago: *Predictions of Cold Dark Matter Models on Small Scales: Current and Future Tests*
24. “The Dynamics of Low Surface Brightness Galaxies”
2002, Carnegie Institution of Washington, DC: *Galaxies: Mind Over Matter*
25. “Galaxy Masses: Disks and Their Halos”
2001, ESO, Venice: *The Mass of Galaxies at Low and High Redshift*
26. “LSB Galaxy Rotation Curves as Tests of CDM & MOND”
2001, Institute for Advanced Studies: *Galaxies and the Dark Matter Problem*
27. “Constraints on the Radial Mass Distribution of Dark Matter Halos from Rotation Curves.”
2001, Yale: *The Shapes of Galaxies and Their Halos*
28. “Galaxy Dynamics and the Second Peak: Cold Dark Matter?”
2000, Columbus: American Physical Society, Division of Particles & Fields
29. “Baryonic Tully-Fisher Relations”
2000, Vatican Observatory: *Galaxy Disks and Disk Galaxies*
30. “Dynamical Constraints on Disk Galaxy Formation”
1999, IAP XV: *Galaxy Dynamics: from the Early Universe to the Present*
31. “How Galaxies Don’t Form”
1998, Rutgers: *Galaxy Dynamics*
32. “Is There a Universal Baryon Fraction?”
1998, Cardiff: IAU Colloquium 171: *The Low Surface Brightness Universe*
33. “Optical Galaxy Selection”
1998, Cardiff: IAU Colloquium 171: *The Low Surface Brightness Universe*
34. “Testing the Modified Dynamics with Low Surface Brightness Galaxies”
1997, Kapteyn Astronomical Institute: *Low Surface Brightness Galaxy Workshop*
35. “Kinematics of Low Surface Brightness Galaxies”
1997, STScI: *Galaxy Journal Club series on Low Surface Brightness Galaxies*

36. “Dwarf and Low Surface Brightness Galaxies”
1996, Heidelberg: IAU Symposium 171: *New Light on Galaxy Evolution*
37. “Low Surface Brightness Galaxies”
1996, STScI: *The Evolution of Low Luminosity Galaxies & Faint Blue Galaxies*
38. “The Number Density of Low Surface Brightness Galaxies”
1994, STScI: *Quantifying Galaxy Morphology at High Redshift*
<http://www.stsci.edu/meetings/galaxy-morphology/proceedings/proceedings.html>
39. “Local Low Surface Brightness Galaxies and the Excess Faint Galaxy Population”
1994, IoA: *Faint Blue Galaxies Workshop*
40. “The Formation and Evolution of Low Surface Brightness Galaxies”
1993, NORDITA: *Dim Galaxies, Dark Matter, and Extragalactic Background Radiation*

Conference Panel Discussions

1. Panel Discussion: The meaning of the Tully-Fisher relationship and the problem of galaxy distances
Panel Members: Tully, McGaugh, Verheijen, S. Miller, Reies
Global Properties of HI in Galaxies, April 2012
2. Conference Summary & Discussion
McGaugh & Dodelson
Modified Gravity Approaches to the Dark Sector, Observatoire d’Strasbourg, July 2010
3. Conference Panel Discussion
Panel Members: White, McGaugh, Courteau, de Jong, Emsellem
Unveiling the Mass - Extracting and Interpreting Galaxy Masses, Queen’s University, June 2009
4. Conference Panel Discussion
S.D.M. White, chair
Mass Profiles and Shapes of Cosmological Structures
Institut d’Astrophisique de Paris, July 2005
5. “Dark Matter Halos and Galactic Rotation Curves – Is There a Problem?”
Panel Members: Steinmetz, van den Bosch, Swaters, Dekel, McGaugh, Primack
Galaxy Formation and Evolution, Institute for Theoretical Physics, (UCSB), March 1999

6. “Dark Matter”
Panel Members: Primack, Gallagher, Binney, Sancisi, McGaugh
Galaxy Dynamics, Rutgers, August 1998
7. Conference Summary
The Low Surface Brightness Universe, Cardiff, July 1998
8. “Gravitational Dynamics: Universal Twists”
1995, *Nature*, 377, 386

Colloquia

1. “Empirical relations between baryons and dynamics in galaxies”
10/07/11 Astro Lunch, University of Pittsburgh
2. “Existential Challenges to Modern Cosmology”
10/22/10 Physics Colloquium, University of Connecticut
3. “Gravity and Dark Matter in the Universe”
09/18/09, Physics Colloquium, West Virginia University
4. “Gravity and Dark Matter in the Universe”
09/15/09, Physics Colloquium, University of Maryland
5. “Cosmic Flights of Fancy: Mass and the Gravity that Moves It”
04/09/08, DTM, Carnegie Institution of Washington
6. “Seeing Through Dark Matter”
02/14/08, TRIUMF, Vancouver, Canada
7. “The Legend of Happy Valley — Tale of the Headless Halo”
10/31/07, Astronomy Department, Penn State University
8. “Does MOND remain viable?”
10/02/07, CAS, Johns Hopkins University
9. “The Pros and Cons of Invisible Mass and Modified Gravity”
04/13/07, Physics Department, George Mason University
10. “The Mass Discrepancy Problem: New physics in matter or gravity?”
04/06/06, Physics Department, University of Rochester

11. "The Mass of Spiral Galaxies, Luminous and Dark"
03/10/05, Astronomy Department, University of Michigan
12. "Astronomical Evidence for and against Dark Matter and Modified Gravity"
29/03/05, Physics Department, University of Florida
13. "Mass Distributions in Spiral Galaxies"
25/03/05 Astrophysics Seminar, Department of Physics and Astronomy, Rutgers University
14. "Mass Discrepancies in the Universe: Dark Matter or Different Dynamics?"
28/04/04, Perimeter Institute, Canada
15. "Dark Matter & Dark Energy: Gravity as We Know It?"
11/06/03, Physics Department, George Mason University
16. "The Era of Precision Cosmology: Whither Now?"
10/03/03, College of Arts and Sciences, John Carroll University
17. "Cosmology and Dark Matter Halos"
04/22/03: Kapteyn Astronomical Institute, University of Groningen
18. "Puzzles in Disk Dynamics"
04/16/03: Institute of Astronomy, University of Cambridge
19. "Gravity or Dark Matter?"
02/12/03: HEP Division Seminar, Argonne National Laboratory
20. "Dark Matter or Gravity?"
12/11/02: Physics Department, UMBC
21. "Gravity or Dark Matter?"
11/14/02: Astrophysics group, Naval Research Laboratory
22. "Gravity or Dark Matter?"
10/30/02: Particle physics group, Johns Hopkins
23. "Gravity or Dark Matter?"
10/14/02: Astronomy Department, University of North Carolina
24. "Gravity or Dark Matter?"
10/04/02: College of Arts and Sciences, John Carroll University

25. "Gravity and Dark Matter"
09/18/02: Astronomy Department, University of Maryland
26. "Dynamical Constraints on Galaxy Formation"
03/11/02: Fermilab Theoretical Astrophysics Seminar, FNAL
27. "The Rotation Curves of Low Surface Brightness Galaxies"
02/12/02: NRAO Greenbank
28. "Monkey Wrenches in Gravity and Cosmology" [honorary]
01/18/02: Mathematics Seminar, University of Michigan-Flint
29. "The Mass Content of the Universe: Dark or Virtual?"
11/28/01: Laboratory for Physical Sciences, NSA/UMd
30. "Galaxy Dynamics and the Cosmic Microwave Background: Small Bumps and Shallow Cusps"
10/03/01: Department of Terrestrial Magnetism, Carnegie Institution of Washington
31. "Small Bumps and Shallow Cusps: CDM, MOND, and Speculations on Cosmology"
02/13/01: NASA/GSFC LHEA colloquium
32. "Small Bumps and Shallow Cusps: CDM, MOND, and Speculations on Cosmology"
12/07/00: Rutgers, Astrophysics group colloquium
33. "Gravity or Dark Matter?"
10/19/00: Astronomy Colloquium, U. Massachusetts (Amherst)
34. "Gravity or Dark Matter?"
09/07/00: Gravity group, Maryland Physics
35. "Cosmological Constraints from Dark Matter Dominated Galaxies"
04/20/00: Goddard Laboratory for Astronomy and Solar Physics
36. "Cosmological Constraints from Dark Matter Dominated Galaxies"
11/10/99: Maryland High Energy Physics group
37. "Phenomenological Constraints on Galaxy Formation Theories"
03/99: Harvard CfA theory group
38. "Galaxy Rotation Curves: Is Dark Matter the Answer?" [honorary]
03/99: Max Planck/ESO Joint Astronomy Colloquium [Invited International Lecture]

39. "Low Surface Brightness Galaxies as Dark Matter Laboratories"
03/99: NASA/GSFC LHEA colloquium
40. "Modified Dynamics"
1998: Rutgers High Energy Physics group
41. "Low Surface Brightness Galaxies and their Number Density"
1998: New Mexico State, Astronomy department colloquium
42. "How Galaxies Don't Form"
1998: Maryland, Astronomy department colloquium
43. "Gravity or Dark Matter?"
1998: Columbia, Astronomy department colloquium
44. "Gravity or Dark Matter?"
1998: Case Western Reserve, Astronomy department colloquium
45. "Gravity and Dark Matter"
1997: Wesleyan, Astronomy department colloquium
46. "How Galaxies Don't Form"
1997: Rutgers, Astrophysics group colloquium
47. "Gravity or Dark Matter?"
1997: NRAO Charlottesville
48. "Low Surface Brightness Galaxies"
1997: SUNY at Stony Brook, Astronomy department colloquium
49. "Low Surface Brightness Galaxies"
1997: Fermilab
50. "Spiral Galaxy Evolution: Complementary Approaches at High and Low Redshift"
1997: Space Telescope Science Institute
51. "Low Surface Brightness Galaxies"
1997: Department of Physics, Stanford University
52. "Gravity or Dark Matter?"
1997: Department of Physics and Astronomy, University of Pennsylvania
53. "Gravity or Dark Matter?"
1996: Department of Terrestrial Magnetism, Carnegie Institution of Washington

54. "The Formation and Evolution of Low Surface Brightness Galaxies"
1996: Yale University
55. "Gravity or Dark Matter?"
1996: Pontificia Universidad Catolica de Chile
56. "The Curtis Schmidt Very Low Surface Brightness Galaxy Survey"
1996: CTIO/NOAO
57. "Constraints on Dark Matter from Low Surface Brightness Galaxies"
1996: STScI
58. "The Physical Properties of Low Surface Brightness Galaxies"
1995: Department of Terrestrial Magnetism, Carnegie Institution of Washington
59. "The Physical Properties of Low Surface Brightness Galaxies"
1995: University of Virginia
60. "The Faint Galaxy Problem"
1995: Institute of Astronomy, University of Cambridge
61. "Things as a Function of Surface Brightness"
1995: Institute of Astronomy, University of Cambridge
62. "Low Surface Brightness Galaxies in a Cosmological Context"
1995: University of Oxford
63. "The Physical Properties of Low Surface Brightness Galaxies"
1995: Queen Mary & Westfield College, University of London
64. "The Physical Properties of Low Surface Brightness Galaxies"
1994: University of Durham
65. "The Physical Properties of Low Surface Brightness Galaxies"
1994: Kapteyn Astronomical Institute, University of Groningen
66. "The Physical Properties of Low Surface Brightness Galaxies"
1993: College of Cardiff, University of Wales
67. "The Physical Properties of Low Surface Brightness Galaxies"
1993: Instituto Astrofisica de Canarias
68. "The Formation and Evolution of Low Surface Brightness Galaxies"
1992: Institute of Astronomy, University of Cambridge

69. "The Constancy of the IMF as a Function of Metallicity"
1992: Kapteyn Institute, University of Groningen
70. "Low Surface Brightness Galaxies"
1991: KPNO/NOAO
71. "Models of Giant Extragalactic HII Regions"
1990: University of Michigan

Other Talks

1. "From Massive Galactic Spiral Arms to Subtle Solar System Perturbations"
05/09/12, Division of Dynamical Astronomy, Timberline Lodge, Oregon
2. "MOND: An Empiricist's Perspective"
03/05/12 Dark Matter Seminar, University of Arizona
3. "Deviations from the Baryonic Tully Fisher Relation"
02/28/12 First Galaxies and Faint Dwarfs: Clues to the Small Scale Structure of Cold Dark Matter, KITP UCSB
4. "Tidal Effects in the Ultrafaint Dwarf Satellite Galaxies of the Milky Way"
04/13/11, Division of Dynamical Astronomy, Austin, Texas
5. "Dark Matter in Dwarf Galaxies"
05/27/10, Advances in Theoretical and Observational Cosmology, University of Maryland
6. "Calibrating the Baryonic Tully-Fisher Relation with Gas Dominated Galaxies"
05/03/09, Division of Dynamical Astronomy, Virginia Beach, Virginia
7. "Calibrating the Baryonic Tully-Fisher Relation with Gas Dominated Galaxies"
01/09/09: Long Beach, 213th AAS, *BAAS*, **41**, 397, 335.07
8. "Reconstructing the Mass Profile of the Milky Way"
04/28/08, Division of Dynamical Astronomy, Boulder, Colorado
9. "The Kinematic Signature of a Bar in the Edge-on Galaxy NGC 2683"
03/15/08, Flash talk, NOAO
10. "An overview of MOND"
03/06/06, Astronomy Journal Club, University of Maryland

11. "The Mass of Spiral Galaxies"
09/20/05, Club Galax, University of Maryland
12. "Were Primordial Dark Halos Hollow?: Decompression of Fabry Perot Rotation Curves"
05/03/02: ALTS lunch talk, Maryland Astronomy Dept.
13. "Ripples in the Cosmic Microwave Background"
03/27/01: Junior Faculty Seminar Series, CMPS Dean
14. "From Galaxy Dynamics to the Cosmic Microwave Background: A Quick tour"
03/09/01: ALTS lunch talk, Maryland Astronomy Dept.
15. "The Second Peak: CDM or No CDM?"
01/09/01: San Diego, 197th AAS, *BAAS*, **32**, 4, 55.06
16. "The Baryonic Tully-Fisher Relation"
11/04/99: Washington Area Astronomer's Meeting
17. "Cosmological Constraints from Dark Matter Dominated Galaxies"
11/02/99: Department of Terrestrial Magnetism, Carnegie Institution of Washington
18. "Puzzles in Disk Stability"
1997: Fermilab, lunch discussion
19. "Faint Galaxy Counts and Local Galaxy Gas Fractions: an Evolutionary Conundrum"
1997: Aspen Winter Astrophysics Conference
20. "Baryon Fractions in Low Surface Brightness Galaxies"
1997: Aspen Winter Astrophysics Conference
21. "Reverse Baryon Catastrophe in Extremely Dark Matter Dominated Galaxies"
1997: Toronto, 189th AAS, *BAAS*, **28**, 4, 84.03
22. "Relations between Luminous and Dark Mass Distributions in Disk Galaxies"
1995: IFACS, NASA GSFC
23. "Rotation Curves of Spiral Galaxies as a Function of Density"
1995: Cambridge, 36th Herstmonceux Conference, *Gravitational Dynamics*
24. "The Number Density of Low Surface Brightness Galaxies"
1993: Washington, D. C., 183rd AAS, *BAAS*, **25**, 1384

25. “Low Surface Brightness Galaxies”
1991: Atlanta, 179th AAS, *BAAS*, **23**, 1444
26. “Understanding the HII Region Oxygen Abundance Sequence”
1990: Philadelphia, 177th AAS, *BAAS*, **22**, 1268
27. “The Shell Galaxy Arp 230: A Merger Induced Starburst”
1989: University of Michigan

Invited Conference Proceedings

1. “Baryons and Their Halos”
10/19/09, Malta: *Hunting for the Dark: The Hidden Side of Galaxy Formation*
2. “Baryonic Masses from Rotation Curves”
06/19/09, Queens University, Kingston, Ontario: *Unveiling the Mass — Extracting and Interpreting Galaxy Masses*
3. “Astronomical and Experimental tests of MOND”
05/20/09, Case Western Reserve University, Cleveland: *Workshop on Tests of Gravity and Gravitational Physics*
4. “Systematic Properties of Galaxy Dynamics”
04/02/09, University of Maryland: *Shedding Light on Dark Matter*
5. “The Baryonic and Dark Matter Distribution of the Milky Way”
and “The Cusp-Core Problem”
03/12/09, Case Western Reserve University, Cleveland: *Detecting Dark Matter in the Milky Way*
6. “Scaling Relations in Dim Galaxies: from the Big and Bright to the Faintest of the Tiny”
08/27/07, University of Michigan, Ann Arbor: *The Globular Clusters — Dwarf Galaxies Connection*
7. “The Halo by Halo Missing Baryon Problem”
McGaugh, S.S. 2007, *IAU Symposium 244, Dark Galaxies & Lost Baryons*, 136 – 145
8. “Balance of Dark and Luminous Mass in Rotating Galaxies”
McGaugh, S.S. 2006, *Applications Of Gravitational Lensing: Unique Insights Into Galaxy Formation And Evolution*

9. “Observational Constraints on the Acceleration Discrepancy Problem”
McGaugh, S.S. 2006, Royal Observatory, Edinburgh: *Alternative Gravities & Dark Matter Workshop* (55 pages: astro-ph/0606351)
10. “Some Systematic Properties of Rotation Curves”
McGaugh, S.S. 2005, *Mass Profiles and Shapes of Cosmological Structures*, the Proceedings of the 21st IAP Colloquium, Paris, July 2005, eds. G. A. Mamon, F. Combes, C. Deffayet, B. Fort, EAS Publications Series, 20, 69 – 76
11. “Galaxy Masses: Disks and Their Halos”
McGaugh, S.S. 2003, *The Mass of Galaxies at Low and High Redshift*, Proceedings of the ESO Workshop held in Venice, Italy, 24-26 October 2001, eds. R. Bender and A. Renzini, 45 – 51
12. “Constraints on the Radial Mass Distribution of Dark Matter Halos from Rotation Curves”
McGaugh, S.S. 2001, *The Shapes of Galaxies and their Dark Halos*, ed. P. Natarajan (New Haven: World Scientific), 186 – 193
13. “Galaxy Dynamics and the Second Peak: Cold Dark Matter?”
McGaugh, S.S. 2001, *International Journal of Modern Physics A*, **16**, 1031 – 1033
14. “Baryonic Tully-Fisher Relations”
McGaugh, S.S. 2001, *Galaxy Disks and Disk Galaxies*, eds. J.G. Funes & E.M. Corsini, ASP **230**, 541 – 544
15. “Dynamical Constraints on Disk Galaxy Formation”
McGaugh, S.S. 2000, *Galaxy Dynamics: from the Early Universe to the Present*, eds. F. Combes, G.A. Mamon, & V. Charmandaris, ASP **197**, 153 – 160
16. “How Galaxies Don’t Form”
McGaugh, S.S. 1999, *Galaxy Dynamics*, eds. D. Merritt & J. Sellwood, ASP **182**, 528 – 538
17. “Optical Galaxy Selection”
McGaugh, S.S. 1999, *IAU Colloquium # 171: The Low Surface Brightness Universe*, eds. J.I. Davies, C. Impey, & S. Phillipps, ASP **170**, 19 – 26
18. “Dwarf and Low Surface Brightness Galaxies”
McGaugh, S.S. 1996, *IAU Symposium # 171: New Light on Galaxy Evolution* eds. R. Bender & R.L. Davies, (Dordrecht: Kluwer), 97–104

Other Conference Contributions

1. "Radio Emission from AGN in Giant LSB Galaxies"
Das, M., Kantharia, N., & Vogel, S.N., & McGaugh, S.S. 2009, ASP, **407**, 167
2. "Kinematic and Photometric Evidence for a Bar in NGC 2683"
Kuzio de Naray, R., Zagursky, M.J. & McGaugh, S.S. 2009, BAAS, **41**, 902
3. "Constraining the NFW Potential with Observations and Modeling of LSB Galaxy Velocity Fields"
Kuzio de Naray, R., McGaugh, S.S., & Mihos, J.C. 2009, AAS, 213, **41**, 325
4. "Constraining Maximum Disk Velocities of High-Mass Galaxies"
Zagursky, M.J. & McGaugh, S.S. 2007, AAS, **211**, 1303
5. "VLT/VIMOS Integral field kinematics of the Giant Low Surface Brightness galaxy ESO 323-G064"
Coccatto, L., Swaters, R., Rubin, V.C., D'Odorico, S. & McGaugh, S. 2007, *IAU 244*, ASP, **396**, 481
6. "Radio Observations of AGN in Low Surface Brightness Galaxies"
Das, M., McGaugh, S.S., Kantharia, N., & Vogel, S.N. 2007, *IAU 244*
7. "Two Dimensional Velocity Fields of Low Surface Brightness Galaxies"
Kuzio de Naray, R., McGaugh, S.S., de Blok, W.J.G., & Bosma, A. 2007, *Island Universes - Structure and Evolution of Disk Galaxies*
8. "Radio Observations of the AGN and Gas in Low Surface Brightness Galaxies"
Das, M., O'Neil, K., Kantharia, N., Vogel, S.N., & McGaugh, S.S. 2006, *IAU Symposium 235: Galaxy Evolution across the Hubble Time*, 135
9. "Two Dimensional Velocity Fields of Low Surface Brightness Galaxies"
Kuzio de Naray, R., McGaugh, S.S., de Blok, W.J.G., & Bosma, A. 2005, *Mass Profiles and Shapes of Cosmological Structures*, eds. G. Mamon, F. Combes, C. Deffayet & B. Fort
10. "The Baryonic Tully Fisher Relation"
Gurovich, S., McGaugh, S.S., Freeman, K., Jerjen, H., Staveley-Smith, L., & de Blok, W.J.G. 2004, PASA
11. "First Results from a Large Survey for Very Low Surface Brightness Galaxies"
Marshall, J.J., McGaugh, S.S., & Aldering, G. 2003, American Astronomical Society Meeting, 203

12. "Hubble Space Telescope Imaging of Globular Clusters in the Face-on Galaxies UGC 5981 & UGC 6614"
Kim, J. H. & McGaugh, S. S. 2002, American Astronomical Society Meeting, 201
13. "CO Detections in Low Surface Brightness Galaxies using the BIMA Array"
Das, M., McGaugh, S. S., Vogel, S. N., Teuben, P. J., & Kim, J. H. 2002, American Astronomical Society Meeting, 201
14. "The Emission Line Ratio of [N II]/[S II] and Luminosity in Spirals"
Kim, J. H., & McGaugh, S. S. 1999, AAS, **31**, 1523
15. "Some Early Universe Predictions of Simple Modified Dynamics"
McGaugh, S. S. 1998, *After the Dark Ages: When Galaxies Were Young (the Universe at $2 < z < 5$)*, eds. S. S. Holt & E. P. Smith, AIP **470**, 72 – 75
16. "The Baryon Fraction Distribution and the Tully-Fisher Relation"
McGaugh, S. S., & de Blok, W. J. G. 1998, *Galactic Halos*, ed. D. Zaritsky, ASP **136**, 210 – 212
17. "The Molecular ISM in Low Surface Brightness Disk Galaxies"
Mihos, J. C., Spaans, M., & McGaugh, S. S. 1998, AAS, **30**, 1355
18. "Gas Content and Star Formation Thresholds in the Evolution of Spiral Galaxies"
McGaugh, S. S., & de Blok, W. J. G. 1997, *Star Formation, Near and Far*, eds. S. S. Holt & L. G. Mundy, AIP **393**, 510 – 513
19. "Dynamical Stability and Galaxy Evolution in LSB Disk Galaxies"
Mihos, J. C., McGaugh, S. S., & de Blok, W. J. G. 1997, *Star Formation, Near and Far*, eds. S. S. Holt & L. G. Mundy, AIP **393**, 311 – 314
20. "Dark Matter in Low Surface Brightness Galaxies"
de Blok, W. J. G., & McGaugh, S. S. 1997, *Dark Matter in Galaxies and Cosmological Implications*, eds. P. Salucci & M. Persic, 39 – 46
21. "An Analysis of the Evolutionary State of SNR G299.2 - 2.9"
Wright, J. T., Slane, P., Vancura, O., Plucinsky, P., Smith, C., & McGaugh, S. 1997, AAS, **191**, 4004
22. "The Properties and Evolution of Low Surface Brightness Disk Galaxies"
de Blok, W. J. G., van der Hulst, J. M. & McGaugh, S. S. 1996, *BAAS*, **28**, 1387

23. “Properties of Low Surface Brightness Galaxies”
W. J. G. de Blok, J. M. van der Hulst, S. S. McGaugh 1996,
IAU Symposium # 171: New Light on Galaxy Evolution eds. R. Bender & R. L. Davies, (Dordrecht: Kluwer), 35
24. “The Contribution of Low Surface Brightness Galaxies to Faint Galaxy Number Counts”
Ferguson, H. C. & McGaugh, S. S. 1994: Baltimore, STScI
Quantifying Galaxy Morphology at High Redshift
<http://stsci.edu/meetings/galaxy-morphology/proceedings/posters.html>
25. “The Contribution of Low Surface Brightness Galaxies to Faint Galaxy Number Counts”
Ferguson, H. C. & McGaugh, S. S. 1993, *BAAS*, **25**, 1398
26. “Chemical abundances in low surface brightness galaxies: Implications for their evolution”
McGaugh, S. S., & Bothun, G. D. 1993, *The Evolution of Galaxies and Their Environment*, 88–89
27. “Low Surface Brightness Galaxies”
van der Hulst, J. M., de Blok, W. J. G., McGaugh, S. S., & Bothun, G. D. 1993, *The Evolution of Galaxies and Their Environment*, 92–93
28. “The Geometry, Composition, and Mass of the Crab Nebula”
McGaugh, S., MacAlpine, G., Lawrence, S., & Uomoto, A. 1989, *BAAS*, **21**, 750
29. “A Preliminary Examination of Redshift and Luminosity Characteristics for APM Survey Quasars”
MacAlpine, G. M., McGaugh, S. S., Anderson, S., Weymann, R., Turnshek, D., Hewett, P., Chaffee, F., & Foltz, C. 1989
Proceedings of a Workshop on Optical Surveys for Quasars, 107–111
also in *Active Galactic Nuclei*, 418–423

Fellowships, Prizes, Awards

Distinguished Fellow, Flint Northern Alumni Association, 2001
Society of $\Sigma\Xi$ Thesis Award, 1991
Rackham Dissertation Grant, 1991
Helen F. Weber Fellow, 1987

High School Valedictorian, 1981

Reviewing Activities

I have refereed over 100 papers for various journals, including the *Astrophysical Journal*, *Monthly Notices of the Royal Astronomical Society*, the *Astronomical Journal*, *Astronomy & Astrophysics*, *Nature*, *Science*, *Physical Review* (including *Phys. Rev. Lett.*), *Journal of Cosmology and Astroparticle Physics*, *Philosophical Transactions of the Royal Society*, *New Astronomy*, *Classical and Quantum Gravity*, *Publications of the Astronomical Society of Australia*, *Advances in High Energy Physics*, *Physics Comments*, and the *Proceedings of the Pakistan Academy of Sciences*.

Other

I maintain two web-based databases for scientific use:

The Data Pages: <http://astroweb.case.edu/ssm/data/>

Provides rapid and easy access to data and models I have published.

The MOND Pages: <http://astroweb.case.edu/ssm/mond/>

Provides links to the literature concerning MOND and various commentary.

Teaching and Advising

Courses Taught — University of Maryland

CORE courses

Semester	Course	Title	Credit	Enrollment
Fall 1999	ASTR 220	Collisions in Space	3	54
Spring 2000	ASTR 220	Collisions in Space	3	52
Fall 2000	ASTR 100[U]	Introduction to Astronomy	3	258
Spring 2001	ASTR 100	Introduction to Astronomy	3	217
Fall 2002	ASTR 100[U]	Introduction to Astronomy	3	266
Spring 2004	ASTR 100	Introduction to Astronomy	3	233
Fall 2005	ASTR 120	Intro. Astr.: Solar System	3	40
Spring 2006	ASTR 121	Intro. Astr.: Stars and Beyond	3	29
Fall 2006	ASTR 120	Intro. Astr.: Solar System	3	41
Spring 2007	ASTR 121	Intro. Astr.: Stars and Beyond	3	24
Fall 2008	ASTR 100	Introduction to Astronomy	3	280
Fall 2009	ASTR 100	Introduction to Astronomy	3	273
Fall 2010	ASTR 100	Introduction to Astronomy	3	270

Specialized Courses

Semester	Course	Title	Credit	Enrollment
Spring 1999	ASTR 688S	Observational Cosmology	3	18
Fall 2001	ASTR 620	Galaxies	3	17
Spring 2002	ASTR 688C	Observational Cosmology	3	12
Fall 2003	ASTR 620	Galaxies	3	16
Fall 2007	ASTR 620	Galaxies	3	8
Spring 2008	HONR 219Q	Perspectives on the Cosmos	3	19
Spring 2009	HONR 219Q	Perspectives on the Cosmos	3	19
Spring 2010	ASTR 622	Cosmology	3	14
Spring 2011	ASTR 421	Galaxies	3	15

Courses Taught — Case Western Reserve University

Semester	Course	Title	Credit	Enrollment
Spring 2013	USNA 287A	Perspectives on the Cosmos	3	17

Independent Study — University of Maryland

Semester	Course	Title	Credit	Student
Fall 1999	ASTR 699	Special Problems in Adv. Astr.	2	J.H. Kim
Spring 2000	ASTR 699	Special Problems in Adv. Astr.	2	J.H. Kim
Fall 2000	ASTR 399	Senior Honors Seminar	1	M. Barker
Fall 2000	ASTR 498	Special Problems in Astronomy	3	A. Kochhar
Spring 2001	ASTR 399	Senior Honors Seminar	2	M. Barker
Fall 2002	ASTR 699	Special Problems in Adv. Astr.	2	R. Kuzio
Spring 2003	ASTR 699	Special Problems in Adv. Astr.	2	R. Kuzio
Fall 2003	ASTR 699	Special Problems in Adv. Astr.	2	R. Kuzio
Spring 2004	ASTR 498	Special Problems in Astronomy	3	M. Bovill
Spring 2004	ASTR 498	Special Problems in Astronomy	3	M. Parlette
Spring 2006	ASTR 399	Honors Seminar	2	D. Schwartz
Fall 2006	ASTR 288	Special Projects in Astronomy	1	M. Zagursky
Fall 2006	ASTR 399	Honors Seminar	2	D. Schwartz
Spring 2007	ASTR 288	Special Projects in Astronomy	2	M. Zagursky
Spring 2007	ASTR 288	Special Projects in Astronomy	2	C. Caviglia
Spring 2007	ASTR 399	Honors Seminar	2	D. Schwartz
Fall 2007	ASTR 399	Honors Seminar	2	D. Stark
Fall 2007	ASTR 498	Special Projects in Astronomy	2	M. Zagursky
Fall 2007	ASTR 498	Special Projects in Astronomy	2	C. Caviglia
Spring 2008	ASTR 399	Honors Seminar	2	D. Stark
Spring 2008	ASTR 498	Special Projects in Astronomy	2	M. Zagursky
Spring 2008	ASTR 498	Special Projects in Astronomy	1	C. Caviglia
Fall 2009	ASTR 288	Special Projects in Astronomy	1	K. Alvarez
Spring 2010	ASTR 288	Special Projects in Astronomy	2	K. Alvarez
Fall 2010	ASTR 498	Special Projects in Astronomy	1	J. Dingott
Spring 2011	ASTR 498	Special Projects in Astronomy	2	H. Katz
Spring 2011	ASTR 498	Special Projects in Astronomy	2	J. Dingott
Spring 2011	ASTR 699	Special Problems in Adv. Astr.	2	J.H. Han
Fall 2011	ASTR 498	Special Projects in Astronomy	2	H. Katz

I have continued to advise Harley Katz since 2011 even though he has not registered for credit. He submitted the results of his work to the *Astrophysical Journal* in November 2012. This work remains under review as of March 2012.

Independent study at Case Western Reserve University is not tracked as above. In 2012-2013, I acted as research advisor to first year graduate student Lei Yang.

Course Development

University of Maryland

I developed the new graduate course *Cosmology* in 1999. This subject had not previously been taught at the graduate level at the University of Maryland. It has since been incorporated into the standard astronomy graduate curriculum. I developed the new Honors Seminar *Perspectives on the Cosmos: From the Ancient Philosophers to Modern Science* in 2008. This course qualified for Humanities CORE credit as a Philosophy course. I redeveloped the undergraduate major offering *Galaxies* in Spring 2011.

Case Western Reserve University

I developed a new University Seminar in Spring 2013 based on the content of the Maryland Honors seminar *Perspectives on the Cosmos: From the Ancient Philosophers to Modern Science*. The chief adjustment was to make the course work writing intensive as part of Case Western's SAGES program. I plan to develop an mixed upper level/graduate course on *Dark Matter* for Fall 2013. The subject of dark matter is now fundamental to extragalactic astronomy and cosmology, but is usually introduced in a piecemeal fashion in other courses. This has led to perceptible variation in the preparation of professionals working on the topic. This course will address this unfortunate situation by presenting all the relevant information in an orderly, dedicated fashion.

Educational Web pages

Beginning in 1999, I have developed and maintained extensive web pages for every course I teach. These pages contain practical information for students plus links to external sites of interest. Links to course web pages can be found at <http://astroweb.case.edu/ssm/courses.html>

Research Advising

Undergraduate Research Students

Anil Kochhar, *Faint Blue Galaxies*, 2000
Mike Barker, *Cosmology from Rotation Curves*, 2000 – 2001
Mia Bovill, *Stellar Populations in a Low Surface Brightness Galaxy*, 2004
Matt Parlette *Large Scale Structure Formation*, 2004
Dan Schwartz, *Finding Very Low Surface Brightness Galaxies*, 2006 – 2007
Matt Zagursky, *Stellar Mass from near-IR Images*, 2006 – 2009
Cathy Caviglia, *Tracers of Populations in Low Surface Brightness Galaxies*, 2007 – 2009
David Stark, *The Tully-Fisher Relation of Gas Dominated Galaxies*, 2007 – 2008
Karina Alvarez, *The Role of Molecular Gas in the Baryonic Tully-Fisher Relation*, 2009
Joshua Dingott, *Calibrating Stellar Population Mass-Color Relations*, 2010 – 2011
Harley Katz, *Numerical Simulations of Structure Formation in MOND*, 2011 – 2013
Wesley Peters, *The Local Volume Tully-Fisher Relation*, 2013 –

Masters Research Students

Ji Hoon Kim, *[S II]/[N II] Line Ratio as a Distance Indicator*, 1999 – 2000
Rachel Kuzio, *Primordial Helium Abundance*, 2002 – 2003
Jee Hye Han, *Simulating HI Data Cubes*, 2011
Lei Yang, *High Resolution Optical Rotation Curves*, 2012 –

Doctoral Research Students

Jim Marshall, Ph.D. 2004: *A Large Survey for Very Low Surface Brightness Galaxies*
Rachel Kuzio de Naray, Ph.D. 2007: *High Resolution Optical Velocity Fields of Low Surface Brightness Galaxies and the Density Profiles of Dark Matter Halos*
Ji Hoon Kim, Ph.D. 2007: *Star Formation History of Low Surface Brightness Galaxies*

Other

Erwin de Blok, Ph.D. (Groningen) 1997
Benoit Famaey, Habilitation (Strasbourg) 2013

Service

Reviewing Activities for Agencies

Domestic

NSF

External Reviewer, 1995

Member, Extragalactic Panel, 2000

Member, Extragalactic Panel, 2003

External Reviewer, 2005

Member, Galaxy Morphology & Properties Panel, 2007

NASA Spitzer Space Telescope

Cycle 8 Telescope Allocation Committee 2011

GBT Green Bank Telescope

Telescope Allocation Committee (External Reviewer) 2009 – 2011

Cottrell College Science Award (Research Corporation)

External Reviewer, 2006

International

NWO (Netherlands Organization for Scientific Research)

International Reviewer: 2001, 2002, 2003, 2005, 2007

Padua (University of Padova)

External Referee, University Research Programmes: 2003, 2011

DFG (German Research Foundation)

International Reviewer: 2005

ARC (Australian Research Council)

International Reviewer: 2006, 2007

CNRS (French National Center for Scientific Research)

International Reviewer: 2009 –

EKOS (Council of Canadian Academies)

Invited Participant, Survey of Science & Technology Strengths: 2011

Royal Society (UK)

Reviewer for University Research Fellowships scheme: 2012

Other non-University Committees

Division on Dynamical Astronomy Nominating Committee (2014-2016)

Member, Scientific Organizing Committee, *Global Properties of HI in Galaxies* (NRAO, Greenbank, 2012)

Users Committee, National Optical Astronomy Observatories (2006 – 2009)

Officer, Committee of the Division on Dynamical Astronomy (2007 – 2009)

Nine tenure/promotion letters since 2010

Member, Scientific Organizing Committee, *Mass Profiles and Shapes of Cosmological Structures* (XXI IAP Colloquium, Paris, 2005)

Participant, Coalition for National Science Funding (Fall 2006)

Member, Local Organizing Committee, *Galaxy Dynamics* conference (Rutgers 1998)

International Ph.D. thesis committees:

Internal Examiner, University of Cambridge: J. Eduardo Telles, Ph.D. 1995

External Examiner, University of Groningen: W.J.G. de Blok, Ph.D. 1997 (co-advisor)

External Examiner, Australian National University, S.H. Oh, Ph.D. 2009

University Service

Case Western Reserve University

Spring 2013

Colloquium Organizer

Observatory strategic document

Fall 2012

Colloquium Organizer

University of Maryland

Spring 2011

Graduate Admissions Chair

Awards Committee

CMNS research scientist research award (internal reviewer)

Spring 2010

Graduate Admission Committee (Chair)
Second Year Project Committee

Fall 2009

Graduate Admission Committee (Chair)
Second Year Project Committee

Spring 2009

Colloquium (Chair)
Second Year Project Committee
Observational Stream Advisor
Qualifying Exam Committee
Teaching Peer Review

Fall 2008

Colloquium (Chair)
MTAC (Maryland Telescope Allocation Committee)
COMAND (Kitt Peak Collaboration Committee)

Spring 2008

Second Year Project Committee
Observational Stream Advisor
Qualifying Exam Committee
Teaching Peer Review
MTAC
COMAND

Fall 2007

Faculty Search Committee
Observational Stream Advisor
MTAC
COMAND

Spring 2007

Second Year Project Committee (Chair)
Kitt Peak Summer School
MTAC
COMAND

Fall 2006

Graduate Curriculum Committee (Chair)
MTAC
COMAND

Spring 2006

Colloquium
Graduate Curriculum Committee (Chair)
MTAC
COMAND

Fall 2005

Colloquium (Chair)
Graduate Curriculum Committee (Chair)
MTAC
COMAND

Spring 2005 (sabbatical)

Faculty Review Committee
Qualifying Exam Committee
Kitt Peak Summer School
MTAC
COMAND

Fall 2004 (sabbatical)

Kitt Peak Summer School
TA Award Committee
MTAC
COMAND

Spring 2004

Second Year Project Committee (Chair)
Qualifying Exam Committee
Faculty Review Committee
MTAC
COMAND

Fall 2003

Graduate Curriculum Committee
MTAC
COMAND

Spring 2003

Colloquium
Second Year Project Committee
Graduate Curriculum Committee
Qualifying Exam Committee

Fall 2002

Colloquium (Chair)
TA Award Committee

Spring 2002

Second Year Project Committee

Fall 2001

Second Year Project Committee

Spring 2001

Graduate Admission Committee (Chair)
Second Year Project Committee

Fall 2000

Graduate Admission Committee (Chair)

Spring 2000

Graduate Admission Committee
Second Year Project Committee
Search Committee for Cosmology Initiative
SNAP (SuperNova Acceleration Probe) satellite committee

Fall 1999

Graduate Admission Committee
Search Committee for Cosmology Initiative
SNAP (SuperNova Acceleration Probe) satellite committee

Spring 1999

Colloquium (Chair)
Search Committee for Cosmology Initiative
SNAP (SuperNova Acceleration Probe) satellite committee

Fall 1998

Colloquium (Chair)

Dissertation Committees:

Rachel Gibbons, Ph.D. 2002
David Mattingly, Ph.D. 2003 (Physics: Dean's Representative)
Amir Farbin, Ph.D. 2003 (Physics: Dean's Representative)
Jim Marshall, Ph.D. 2004 (Chair)
Hock Seng Goh, Ph.D. 2004 (Physics: Dean's Representative)
David Rupke, Ph.D. 2004 (Physics: Dean's Representative)
Lisa Mazucca, Ph.D. 2006
Rachel Kuzio de Naray, Ph.D. 2007 (Chair)
Rahul Shetty, Ph.D. 2007
Ji Hoon Kim, Ph.D. 2007 (Chair)
Mia Bovill (2011)
Mike Gill (2011)
Hannah Krug (2013)

Community Service & Outreach

Public Lectures

“The Driving Role of Gravity in Cosmology”
12/09/10: Cleveland Museum of Natural History

“Origins: the Universe”
09/08/10: Clarice Smith Origins program

“Gravity and the Fate of the Universe: Mostly Dark, or all Bright?”
03/25/09: MIT club of NE Ohio

“Observing at Kitt Peak”
12/05/05: Maryland Observatory Open House

“Light in the Darkness: The Role of Mass, Energy, and Gravity in Modern Cosmology”
12/09/04: Cleveland Museum of Natural History

“Dark Matter Puzzles”
11/22/04: Physics & Astronomy Student Club, Case Western Reserve University

“What is the Universe Made of?”
01/20/04: Maryland Observatory Open House

“Distinguishing Cosmologies: Arguments for and Against the Standard World Model,
Then and Now”
10/03/03: First Year Seminar, John Carroll University

“Gravity, the Universe, and Dark Matter”

05/13/03: Public talk, Society for Industrial and Applied Mathematics

“What is the Universe Made of?”

02/05/03: Maryland Observatory Open House

“Collective Denial and Individual Responsibility: Galileo’s Daughters”

10/04/02: First Year Seminar, John Carroll University

“Where is Most of the Universe Hiding? The Missing Mass Problem”

03/05/02: Smithsonian Associates Lecture Series, Smithsonian Institution

“Dark Matters: Faith and the Scientific Method”

02/07/02: Doubt Seminar, John Carroll University

“Basic Cosmology”

01/17/02: *Great Ideas in Science* Honors class, University of Michigan-Flint

“What is the Universe Made of?”

11/20/01: Maryland Observatory Open House

“Mass Gone Missing in the Universe”

11/20/00: Maryland Observatory Open House

“Dim Galaxies shed New Light on Old Problems”

05/02/00: Public talk, Space Telescope Science Institute

“What is the Universe Made of?”

04/05/00: Maryland Observatory Open House

“Galaxies are Made of Stars”

01/20/99: Maryland Observatory Open House

Primary Education Outreach

Since 2000, I have conducted an outreach program in which I visit elementary school classrooms to discuss astronomy. This is coordinated with teachers to correspond to astronomy-related topics in the standard curriculum. It has proven to be very popular with the kids.

Public Relations

I frequently respond to inquiries from the press (and, thanks to e-mail, the general public). While this is difficult to track, these efforts do occasionally contribute to substantive events, e.g.:

“Predicting the Speeds of Stars in the Dwarf Satellite Galaxies of Andromeda: Dark Matter or Modified Gravity?”

National Geographic Newswatch, March 2013

Radio Interview

German Public Radio, March 2013

“Cosmic Fuggedaboutit: Dark Matter May Not Exist At All”

CNN/Time, February 2013

“Dark Matter Rival Theory Predicts Properties Of Satellite Galaxies”

redOrbit, February 2013

“Key Property in Andromeda’s Satellites - Predicted”

MessageToEagle, February 2013

“MOND used to predict key property in Andromeda’s satellites”

PhysOrg, February 2013

“Le Cosmos Chahute la Relativite”

Science et Vie, September 2012

“Matiere Noire et Gravitation Modifiée”

Science et Vie, May 2011

“42 Galaxies Voutent pour une Gravitation Modifiée”

Ciel & Espace, April 2011

“Testing Gravity in Gas Rich Galaxies”

Viewpoints, March 2011

and related stories in io9, ScienceDaly, PhysOrg, & redOrbit

“Astronomer Stacy McGaugh on a Universe without Dark Matter”

Motherboard, March 2011

“Dark Matter Theory Challenged by Gassy Galaxies Result”

BBC News, February 2011

- “More Evidence Against Dark Matter?”
Science NOW, February 2011
- “Alternate Theory Poses Dark Matter Challenge”
Nature, February 2011
- “Reliance on Indirect Evidence Fuels Dark Matter Doubts”
Scientific American, December 2010
- “Rethinking Galactic Architecture”
Science NOW, November 2010
- “Matiere Noire”
Ciel & Espace, February 2010
- “UM-led Team Shines Cosmic Light on Missing Ordinary Matter”
AAS press conference, January 2010
- Guest Speaker, *Science Cafe*
09/10/07: NPR/WCPN
Subject: Shedding Light on Dark Matter
- “Dark Matter is Dead”
Sky at Night (BBC), September 2007
- “Battlefield Galactica: Dark Matter vs. MOND”
Sky & Telescope, April 2007
- “Gravity’s Dark Side”
Physics World, June 2006
- “Nailing Down Gravity”
Discover, p. 34-41, October 2003
- “Ditching Dark Matter”
The Guardian, 13 February 2003
- “Breaking the Law”
New Scientist, p.34-37, 25 January 2003
- “Does Dark Matter Really Exist?”
Scientific American, August 2002, pp. 42-52

“Out of Sight, Out of MOND”

Astronomy, August 2001, pp. 26-31

Guest Speaker, *Talk of the Nation: Science Friday*

10/06/00: National Public Radio

Subject: How good are our assumptions about how the universe works?

“Radical Gravity Theory Hits Large-Scale Snag”

Science, June 2001, p. 1629

“The Fall of Cold Dark Matter?”

Astronomy, March 2001, pp. 24-25

“Heretical Idea Faces Its Sternest Test”

Science, 28 January 2000 (v. 287), pp. 572-573

“The Mystery of the Behavior of the Universe”

Ma'ariv (Israel), April 1998

“More Galaxies Than We Knew”

Sky & Telescope, August 1994, pp. 15-16

“A dim class of galaxies offers unexpected fascination”

Scientific American, April 1992, p. 36

“Dim galaxies may illuminate cosmic mysteries”

Detroit Free Press, January 21, 1992

“UM astronomer views dim galaxies”

Ann Arbor News, January 16, 1992

See also the news links at <http://astroweb.case.edu/ssm/mond/otherlinks.html>