

Peter Erwin

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Research Interests:

Structure, dynamics, and evolution of galaxies; barred and double-barred galaxies; supermassive black holes, nuclear star clusters, and their host galaxies; bulges and pseudobulges; outer disks of galaxies; secular evolution of galaxies; galaxy morphology and environment.

Education:

Ph.D.: Department of Astronomy, University of Wisconsin, Madison, Wisconsin
May 2000

Thesis title: “Non-axisymmetric Dynamics in Binaries and the Centers of Galaxies”;
Advisor: Linda S. Sparke; Minor: Physics

Bachelor of Arts: Wesleyan University, Middletown, Connecticut
May 1988, Astronomy (with honors) and History

Thesis title: “[Ca II] Studies of Pre-Main Sequence Stars”; Advisor: William Herbst

Queen Mary College, University of London (Spring, 1987)
Coursework in astronomy and medieval history

Research and Work Experience:

Max-Planck-Institute for Extraterrestrial Physics: Postdoctoral Researcher. 8/2005–present.

Instituto de Astrofísica de Canarias: Support Astronomer/Postdoctoral Researcher. 2/2000–7/2005.

Department of Astronomy, University of Wisconsin, Madison: Research Assistant; research advised by Linda S. Sparke. 9/1993–12/1999.

The Aerospace Corporation: Associate of the Technical Staff; promoted to Member of the Technical Staff in 1991: responsibilities included data reduction and analysis (IR astronomical and atmospheric data), observing runs, programming, and astronomical research. Held Secret-level security clearance. 12/1988–6/1992.

Department of Astronomy, Wesleyan University: Research Assistant/Observer for photometry of T Tauri stars at Van Vleck Observatory. 7–12/1986, 7/1987–4/1988.

Teaching Experience:

Department of Astronomy, University of Wisconsin, Madison: Teaching Assistant, Astronomy 100. Fall 1992, Fall 1993, Fall 1997, Spring 1998. Planned and conducted discussion sections for survey astronomy course; guest lecture in main class; graded; conducted and graded experimental computer-based lab sessions (Fall 1997).

Department of Astronomy, Wesleyan University: Teaching Assistant, Astronomy 101. Fall 1987. Conducted lab sections; graded.

Honors:

Robbins Memorial Prize (Department of History, Wesleyan University, for excellence in history)

Littell Prize (Department of Astronomy, Wesleyan University, for excellence in advanced astronomy coursework)

Departmental Honors in Astronomy (Wesleyan University)

Phi Beta Kappa
Full Member, Sigma Xi

Technical and Other Expertise:

Astronomical Observing:

IR spectroscopic observing at Lick Observatory (Shane 3m), Mt. Lemmon Observatory (UCSD/Wyoming 1.5m), KPNO 0.9m

Imaging and multi-fiber spectroscopy at WIYN 3.5-m, KPNO; imaging and long-slit spectroscopy at WHT 4.2-m, INT 2.5-m, and NOT 2.5-m, La Palma; long-slit spectroscopy at NTT 3.5-m, La Silla; infrared imaging at WHT 4.2-m and TCS 1.5-m (Tenerife); infrared IFU 2D spectroscopy at VLT (Paranal)

Instrument setup and support for visiting astronomers plus service/queue observing at Isaac Newton Group, Observatorio del Roque de los Muchachos, La Palma (optical imaging and spectroscopy)

Astronomical Data Reduction and Analysis:

IR spectroscopic data reduction and analysis, including integral-field-unit (IFU) data reduction

Optical and near-IR imaging data reduction and analysis (including astrometry and photometric calibration)

Extraction of galaxy stellar kinematics from IFU data

HST (ACS, WFPC2, and NICMOS) data reduction and photometric calibration

Faint source measurements with SExtractor, photometric error estimation and correction, and catalog analysis

Photometric redshifts

Programming and Modeling:

Extensive programming experience in Python, C, C++, IDL, and IRAF

C++ code for flexible galaxy image fitting, including easy addition of arbitrary new components and both Levenberg-Marquardt and differential evolution minimization

C++ code for nonlinear profile fitting, including differential evolution techniques and Monte Carlo error estimation

C code for gravitational orbit calculations and analysis (free-particle integration, stability analyses, Poincaré sections, etc.)

Python code for searching telescope archives (available at: <http://www.mpe.mpg.de/~erwin/code/>)

Python code for matching, merging, and filtering astronomical source catalogs

Refereeing for *Nature*, *Monthly Notices of the Royal Astronomical Society*, *The Astrophysical Journal*, *The Astrophysical Journal Letters*, *The Astronomical Journal*, and *Astronomy & Astrophysics*

Proposal reviewing for NSF Astronomy & Astrophysics Grants program

Partially fluent in Spanish and German

References

The following scientists can provide letters of recommendation:

Ralf Bender (bender@mpe.mpg.de)

Max-Planck-Institut für Extraterrestrische Physik

Roberto Saglia (saglia@mpe.mpg.de)

Max-Planck-Institut für Extraterrestrische Physik

Marc Balcells (balcells@iac.es)

Isaac Newton Group of Telescopes; Instituto de Astrofísica de Canarias

John E. Beckman (jeb@iac.es)

Instituto de Astrofísica de Canarias

Linda S. Sparke (linda.s.sparke@nasa.gov)

NASA; Department of Astronomy, University of Wisconsin – Madison

Publications and Presentations

Refereed Papers:

1. “Evolutionary Paths Between Different Red Galaxy Types and the Buildup of Massive E-S0’s Through Major Mergers at $0.7 < z < 1.2$,” Mercedes Prieto, M. Carmen Eliche-Moral, Marc Balcells, David Cristóbal-Hornillos, **Peter Erwin**, David Abreu, Lilian Domínguez-Palmero, Angela Hempel, Carlos López San Juan, Rafael Guzmán, Pablo Pérez-González, Guillermo Barro, Jesus Gallego, and Jaime Zamorano, *Monthly Notices of the Royal Astronomical Society*, submitted.
2. “The HST/ACS Coma Cluster Survey: VIII. Barred Disk Galaxies in the Core of the Coma Cluster,” Irina Marinova, Shardha Jogee, Tim Weinzirl, **Peter Erwin**, Neil Trentham, Henry C. Ferguson, Marc Balcells, David Carter, Mark den Brok, Alister W. Graham, Paul Goodfroiij, Rafael Guzmán, Derek Hammer, Carlos Hoyos, Bahram Mobasher, Mustapha Mouhcine, Reynier F. Peletier, Eric Peng, and Gijs Verdoes Kleijn, *The Astrophysical Journal*, in press.
3. “The Relation Between Galaxy Morphology and Environment in the Local Universe: An RC3-SDSS Picture,” David Wilman and **Peter Erwin**, *The Astrophysical Journal*, in press.
4. “Do Nuclear Star Clusters and Supermassive Black Holes Follow the Same Host-Galaxy Correlations?” **Peter Erwin** and Dimitri A. Gadotti, invited paper for *Advances in Astronomy* special issue, in press.
5. “A Strong Dichotomy in S0 Disk Profiles Between the Virgo Cluster and the Field,” **Peter Erwin**, Leonel Gutiérrez, and John E. Beckman, 2012, *The Astrophysical Journal Letters*, **744**: L11.
6. “The Outer Disks of Early-Type Galaxies. II. Surface-Brightness Profiles of Unbarred Galaxies and Trends with Hubble Type,” Leonel Gutiérrez, **Peter Erwin**, Rebeca Aladro, and John E. Beckman, 2011, *The Astronomical Journal* **142**: 145.
7. “The HST/ACS Coma Cluster Survey: VII – Colour Gradients in Giant and Dwarf Early-Type Galaxies,” M. den Brok, R.F. Peletier, E.A. Valentyn, M. Balcells, D. Carter, **P. Erwin**, H.C. Ferguson, P. Goudfrooij, A.W. Graham, D. Hammer, J.R. Lucey, N. Trentham, R. Guzmán, C. Hoyos, G. Verdoes Kleijn, S. Jogee, A.M. Karick, I. Marinova, M. Mouhcine, and T. Weinzirl, 2011, *Monthly Notices of the Royal Astronomical Society* **414**: 3052.
8. “The central black hole mass of the high- σ but low-bulge-luminosity lenticular galaxy NGC 1332,” S. P. Rusli, J. Thomas, **P. Erwin**, R. P. Saglia, N. Nowak, and R. Bender, 2011, *Monthly Notices of the Royal Astronomical Society* **410**: 1223.
9. “The HST/ACS Coma Cluster Survey. II. Data Description and Source Catalogs,” Derek Hammer and 46 co-authors, 2010, *The Astrophysical Journal Supplement* **191**: 143.
10. “Do black hole masses scale with classical bulge luminosities only? The case of the two composite pseudo-bulge galaxies NGC 3368 and NGC 3489,” N. Nowak, J. Thomas, **P. Erwin**, R. P. Saglia, R. Bender, and R. I. Davies, 2010, *Monthly Notices of the Royal Astronomical Society* **403**: 646.
11. “The HST/ACS Coma Cluster Survey – V. Compact Stellar Systems in the Coma Cluster,” J. Price, S. Phillipps, A. Huxor, N. Trentham, H. C. Ferguson, R. O. Marzke, A. Hornschemeier, P. Goudfrooij, D. Hammer, R. B. Tully, K. Chiboucas, R. J. Smith, D. Carter, D. Merritt, M. Balcells, **P. Erwin**, and T. H. Puzia, 2009, *Monthly Notices of the Royal Astronomical Society* **397**: 1816.
12. “Robust Determination of the Major Merger Fraction at $z = 0.6$ in Groth Strip,” Carlos López-Sanjuan, Marc Balcells, Cesar Enrique García-Dabó, Mercedes Prieto, David Cristóbal-Hornillos, M. Carmen Eliche-Moral, David Abreu, **Peter Erwin**, and Rafael Guzmán, 2009, *The Astrophysical Journal* **694**: 643.
13. “Bulges of Disk Galaxies at Intermediate Redshifts. I. Samples with and without Bulges in the Groth Strip,” L. Domínguez-Palmero, M. Balcells, **P. Erwin**, M. Prieto, D. Cristóbal-Hornillos, M. C. Eliche-Moral, and R. Guzmán, 2008, *Astronomy & Astrophysics* **488**: 1167.
14. “The HST/ACS Coma Cluster Survey: I – Survey Objectives and Design,” David Carter and 36 co-authors, 2008, *The Astrophysical Journal Supplement* **176**: 424.

15. “NGC 2655: From Inner Polar Ring to Outer Shells and Tails,” Linda S. Sparke, Gustaaf van Moorsel, **Peter Erwin**, and Elizabeth Wehner, 2008, *The Astronomical Journal* **135**: 99.
16. “The Outer Disks of Early-Type Galaxies. I. Surface-Brightness Profiles of Barred Galaxies,” **Peter Erwin**, Michael Pohlen, and John E. Beckman, 2008. *The Astronomical Journal* **135**: 20.
17. “Double-Barred Galaxies at Intermediate Redshifts: A Feasibility Study,” Thorsten Lisker, Victor P. Debattista, Ignacio Ferreras, and **Peter Erwin**, 2006. *Monthly Notices* **370**: 477.
18. “GOYA Survey: U and B Number Counts in the Groth-Westphal Strip,” M. Carmen Eliche-Moral, Marc Balcells, Mercedes Prieto, César E. García-Dabó, **Peter Erwin**, and David Cristóbal-Hornillos, 2006. *The Astrophysical Journal* **639**: 644.
19. “How Large Are the Bars in Barred Galaxies?” **Peter Erwin**, 2005. *Monthly Notices* **364**: 283.
20. “Anti-Truncation of Disks in Early-Type Barred Galaxies,” **Peter Erwin**, John E. Beckman, and Michael Pohlen, 2005. *Astrophysical Journal Letters* **626**: L81.
21. “The Nature of Luminous X-Ray Sources with Mid-Infrared Counterparts,” A. Alonso-Herrero and 30 co-authors, 2004. *The Astrophysical Journal Supplement* **154**: 155.
22. “Evidence for a New Elliptical-Galaxy Paradigm: Sérsic and Core Galaxies,” I. Trujillo, **Peter Erwin**, A. Asensio Ramos, and A.W. Graham, 2004. *The Astronomical Journal* **127**: 1917.
23. “Double-Barred Galaxies: I. A Catalog of Barred Galaxies with Secondary Bars and Inner Disks,” **Peter Erwin**, 2004. *Astronomy & Astrophysics* **415**: 941.
24. “When Is a Bulge Not a Bulge? Inner Disks Masquerading as Bulges in NGC 2787 and NGC 3945,” **Peter Erwin**, J.C. Vega Beltrán, Alister W. Graham, and J.E. Beckman, 2003. *The Astrophysical Journal* **597**: 929.
25. “A New Empirical Model for the Structural Analysis of Early-type Galaxies and a Critical Review of the Nuker Model,” Alister W. Graham, **Peter Erwin**, I. Trujillo, and A. Asensio Ramos, 2003. *Astronomical Journal* **125**: 2951.
26. “An Imaging Survey of Early-Type Barred Galaxies,” **Peter Erwin** and Linda S. Sparke, 2003. *Astrophysical Journal Supplement* **146**: 299.
27. “Double Bars, Inner Disks, and Nuclear Rings in Early-Type Disk Galaxies,” **Peter Erwin** and Linda S. Sparke, 2002. *Astronomical Journal* **124**: 65.
28. “A Correlation Between Galaxy Light Concentration and Supermassive Black Hole Mass,” Alister W. Graham, **Peter Erwin**, N. Caon, and I. Trujillo, 2001. *Astrophysical Journal Letters* **563**: L11.
29. “NGC 4340: Double Bar + Fossil Nuclear Ring,” **Peter Erwin**, J.C. Vega Beltrán, and J. Beckman, 2001. *Astrophysics and Space Science Supplement* **277**: 457.
30. “Triple Bars and Complex Central Structures in Disk Galaxies,” **Peter Erwin** and L.S. Sparke, 1999a. *Astrophysical Journal Letters* **521**: L37–40.
31. “Vertical Instabilities and Off-Plane Orbits in Circumbinary Disks,” **Peter Erwin** and L.S. Sparke, 1999b. *Astrophysical Journal* **521**: 798–822.
32. “Near-Infrared and Ultraviolet Spectrophotometry of Symbiotic Novae,” R.J. Rudy, S.R. Meier, G.S. Rossano, D.K. Lynch, R.C. Puetter, and **Peter Erwin**, 1999. *Astrophysical Journal Supplement* **121**: 533–545.
33. “Near-Infrared Spectrophotometry of the Eruptive Star MWC 560”, S.R. Meier, R.J. Rudy, D.K. Lynch, G.S. Rossano, **Peter Erwin**, and R.C. Puetter, 1996. *Astronomical Journal* **111**: 476–479.
34. “Strong [Fe II] Emission from NGC 1275”, R.J. Rudy, R.D. Cohen, G.S. Rossano, **Peter Erwin**, R.C. Puetter, M.A. Greenhouse, and C.E. Woodward, 1993. *Astrophysical Journal* **414**: 527–534.

35. “Near-Infrared and Ultraviolet Spectrophotometry of the Young Planetary Nebular Hubble 12”, R.J. Rudy, G.S. Rossano, **Peter Erwin**, R.C. Puetter, and W.A. Feibelman, 1993. *Astronomical Journal* **105**: 1002–1009.
36. “The Near-Infrared [Fe II] Lines of MWC 922”, R.J. Rudy, **Peter Erwin**, G.S. Rossano, and R.C. Puetter, 1992. *Astrophysical Journal* **398**: 278–285.
37. “0.9–1.35 μm Spectra of Five Type Ia Supernovae Near Maximum Light”, D.K. Lynch, **Peter Erwin**, R.J. Rudy, G.S. Rossano, and R.C. Puetter, 1992. *Astronomical Journal* **104**: 1156–1160.
38. “Time Development of the Near-Infrared Spectrum of the Slow Nova V2214 Ophiuchi (Nova Ophiuchi 1988)”, **Peter Erwin**, D.K. Lynch, R.J. Rudy, G.S. Rossano, and R.C. Puetter, 1992. *Astronomical Journal* **103**: 1970–1975.
39. “0.8–1.6 Micron Spectroscopy of the Planetary Nebula NGC 7027”, R.J. Rudy, **Peter Erwin**, G.S. Rossano, and R.C. Puetter, 1992. *Astrophysical Journal* **384**: 536–544.
40. “The 1.0–1.3 μm Spectrum of LkH α 101”, R.J. Rudy, **Peter Erwin**, G.S. Rossano, and R.C. Puetter, 1991. *Astrophysical Journal* **383**: 344–350.
41. “Near-Infrared [Fe II] Emission of M82 Supernova Remnants: Implications for Tracing the Supernova Content of Galaxies”, M.A. Greenhouse, C.E. Woodward, H.A. Thronson, Jr., R.J. Rudy, G.S. Rossano, **Peter Erwin**, and R.C. Puetter, 1991. *Astrophysical Journal* **383**: 164–173.
42. “The 0.46–1.3 Micron Spectrum of the Planetary Nebular BD +30°3639”, R.J. Rudy, R.D. Cohen, G.S. Rossano, **Peter Erwin**, R.C. Puetter, and D.K. Lynch, 1991. *Astrophysical Journal* **380**: 151–160.
43. “Near-Infrared Spectroscopy of the Planetary Nebula NGC 6572”, R.J. Rudy, G.S. Rossano, **Peter Erwin**, and R.C. Puetter, 1991. *Astrophysical Journal* **368**: 468–473.
44. “An Early 1.0–1.35 μm Spectrum of Type Ia Supernova 1989B and the *J*-Band Absorption”, D.K. Lynch, R.J. Rudy, G.S. Rossano, **Peter Erwin**, R.C. Puetter, and D. Branch, 1990. *Astronomical Journal* **100**: 223–225.
45. “Nova Ophiuchi 1988: 0.9–1.35 μm Spectroscopy 6 Months After Discovery”, D.K. Lynch, R.J. Rudy, G.S. Rossano, **Peter Erwin**, and R.C. Puetter, 1989. *Astronomical Journal* **98**: 1682–1685.

Conference Proceedings:

1. “The Origin of the Morphology-Density Relation,” David J. Wilman, **Peter Erwin**, Gabriella de Lucia, Fabio Fontanot, and Pierluigi Monaco, 2011. In *Environment and the Formation of Galaxies: 30 Years Later – Proceedings of Symposium 2 of JENAM 2010*, eds. I. Ferreras & A. Pasquali (Springer), in press.
2. “Double-Barred Galaxies,” **Peter Erwin**, 2011. In *Tumbling, Twisting, and Winding Galaxies: Pattern Speeds along the Hubble Sequence*, eds. E. M. Corsini & V. P. Debattista (Memorie della Società Astronomica Italiana Supplement, vol. 18), 145.
3. “What Can the Radial Surface Brightness Profiles of Galaxy Discs Tell Us About Their Evolution?,” John E. Beckman, Leonel Gutiérrez, **Peter Erwin**, Ruyman Azzollini, and Inma Martínez-Valpuesta, 2010. In *Galaxies and their Masks*, eds. D. L. Block, K. C. Freeman, & I. Puerari (Springer), 169.
4. “Barred Galaxies in the Coma Cluster,” Irina Marinova et al., 2010. In *New Horizons in Astronomy: Frank N. Bash Symposium 2009*, eds. L. M. Stanford, J. D. Green, L. Hai, & Y. Mao (San Francisco: Astronomical Society of the Pacific), 219.
5. “Do Nuclear Star Clusters and Supermassive Black Holes Follow the Same Host-Galaxy Correlations?” **Peter Erwin** and Dimitri Gadotti, 2010. In *Hunting for the Dark: The Hidden Side of Galaxy Formation*, eds. V.P. Debattista & C.C. Popescu (AIP Conference Proceedings), 223.

6. “The Coexistence of Classical Bulges, Pseudobulges, and Supermassive Black Holes,” **Peter Erwin**, 2009. In *The Monster’s Fiery Breath: Feedback in Galaxies, Groups, and Clusters*, eds. S. Heinz & E. Wilcots (Melville, NY: AIP Conference Proceedings), 104.
7. “Black holes in low-mass bulges and pseudobulges,” N. Nowak, R. P. Saglia, J. Thomas, **P. Erwin**, and R. Bender, 2008. In *Mem.S.A.It., Proc. of Crete Conference*, in press.
8. “Trends for Outer Disk Profiles,” **Peter Erwin**, Michael Pohlen, Leonel Gutiérrez, and John E. Beckman, 2008. In *Formation and Evolution of Galaxy Disks, ASP Conference Series, Vol. 396*, eds. J. G. Funes & E. M. Corsini (San Francisco: ASP Conference Series), 207.
9. “The Good, the Bad, and the Ugly: Three Types of Disks,” M. Pohlen, J. E. Beckman, R. Aladro, R.-J. Dettmar, **P. Erwin**, L. Gutiérrez, R. F. Peletier, I. Trujillo, & S. Zaroubi, 2008. In *Formation and Evolution of Galaxy Disks, ASP Conference Series, Vol. 396*, eds. J. G. Funes & E. M. Corsini (San Francisco: ASP Conference Series), 183.
10. “Extended UV (XUV) Emission in Nearby Galaxy Disks,” Armando Gil de Paz and 20 co-authors, 2008. In *Formation and Evolution of Galaxy Disks, ASP Conference Series, Vol. 396*, eds. J. G. Funes & E. M. Corsini (San Francisco: ASP Conference Series), 197.
11. “The Coexistence of Classical Bulges and Disky Pseudobulges in Early-Type Disk Galaxies,” **Peter Erwin**, 2008. In *IAU Symposium 245: Formation and Evolution of Galaxy Bulges*, eds. M. Bureau, E. Athanassoula, & B. Barbuy (Cambridge: Cambridge University Press), 113.
12. “Black Holes in Low-Mass Bulges and Pseudobulges,” Nina Nowak, Roberto P. Saglia, Jens Thomas, **Peter Erwin**, and Ralf Bender, 2008. In *IAU Symposium 245: Formation and Evolution of Galaxy Bulges*, eds. M. Bureau, E. Athanassoula, & B. Barbuy (Cambridge: Cambridge University Press), 253.
13. “The Outer Structure of Galactic Disks: Connections Between Bars, Disks, and Environments,” **Peter Erwin**, Michael Pohlen, John E. Beckman, Leonel Gutiérrez, and Rebeca Aladro, 2008. In *Pathways through an Eclectic Universe*, eds. J. H. Knapen, T. J. Mahoney, & A. Vazdekis (San Francisco: ASP Conference Series), 251.
14. “Three Types of Galaxy Disks,” M. Pohlen, **P. Erwin**, I. Trujillo, and J. E. Beckman, 2008. In *Pathways through an Eclectic Universe*, eds. J. H. Knapen, T. J. Mahoney, & A. Vazdekis (San Francisco: ASP Conference Series), 247.
15. “Classification of Galaxies by Their Radial Profiles: Unbarred Early Types” Rebeca Aladro, L. Gutiérrez, **Peter Erwin**, and J. E. Beckman, 2008. In *Pathways through an Eclectic Universe*, eds. J. H. Knapen, T. J. Mahoney, & A. Vazdekis (San Francisco: ASP Conference Series), 288.
16. “The External Zones of Spiral Galaxies: Truncations, No Truncations and Antitruncations,” J. E. Beckman, **P. Erwin**, M. Pohlen, L. Gutierrez, R. Aladro, and I. Trujillo, 2008. In *Mapping the Galaxy and Nearby Galaxies*, ed. K. Wada (Springer), 310.
17. “The Edges of the Stellar Populations of Early Type Spirals as Probed by Their Radial Brightness Profiles,” J. Beckman, L. Gutiérrez, R. Aladro, **P. Erwin**, and M. Pohlen, 2007, in *IAU Symposium 241: Stellar Populations as Building Blocks of Galaxies* (Cambridge: Cambridge University Press), 495.
18. “Optical and near IR galaxy number counts in the GOYA survey. The ages of Ellipticals,” M. Prieto, M. C. Eliche-Moral, M. Balcells, C. E. García-Dabó, D. Cristóbal-Hornillos, and **P. Erwin**, 2007, *First Light Science with the GTC, RevMexAA (SC)*, 29, eds. R. Guzmán, C. Packham, J. M. Rodríguez-Espinosa, & S. Torres-Peimbert, 173.
19. “GOYA Survey: Mergers up to $z = 1$ in B - and K_s -selected samples,” C. López-Sanjuan, M. Balcells, M. Prieto, D. Cristóbal-Hornillos, M. C. Eliche-Moral, **P. Erwin**, D. Abreu, C. E. García-Dabó, L. Domínguez-Palmero, and J. Zumsteg, 2007, *First Light Science with the GTC, RevMexAA (SC)*, 29, eds. R. Guzmán, C. Packham, J. M. Rodríguez-Espinosa, & S. Torres-Peimbert, 172.

20. “Colors of intermediate z bulges in the GOYA survey,” L. Domínguez-Palmero, M. Balcells, and **P. Erwin**, 2007, *First Light Science with the GTC, RevMexAA (SC)*, 29, eds. R. Guzmán, C. Packham, J. M. Rodríguez-Espinosa, & S. Torres-Peimbert, 169.
21. “GOYA: K_s -Selected Galaxy Catalog $0 < z < 5$,” D. Abreu, M. Balcells, C. E. García-Dabó, M. Prieto, **P. Erwin**, and M. C. Eliche-Moral, 2007, *First Light Science with the GTC, RevMexAA (SC)*, 29, eds. R. Guzmán, C. Packham, J. M. Rodríguez-Espinosa, & S. Torres-Peimbert, 165.
22. “The Three Types of Galaxy Disks,” **Peter Erwin**, Michael Pohlen, and John E. Beckman, 2007, in *MPE Research 2005-2006: A Book of Highlights*, eds. G. Hasinger, B. Boller, Th. Boller, & W. Collmar (Garching: MPE), 45.
23. “Finding Double-Barred Galaxies with HST,” T. Lisker, V. P. Debattista, I. Ferreras, and **P. Erwin**, 2007. In *Galaxy Evolution Across the Hubble Time, IAU Symposium No. 235*, eds. F. Combes and J. Palous (Cambridge: Cambridge University Press), 117.
24. “Models of Galaxy Number Counts in the Groth-Westphal Strip of the GOYA Survey,” M. Prieto, M. C. Eliche-Moral, C. E. García-Dabó, M. Balcells, D. Cristóbal-Hornillos, **P. Erwin**, L. Domínguez-Palmero, and D. Abreu, 2005. In *Proceedings of SEA/JENAM 2004, The Many Scales of the Universe, Joint European and National Astronomy Meeting*, ed. J. C. del Toro Iniesta et al. (Kluwer), in press.
25. “The Bulges of Intermediate Redshift Galaxies,” L. Domínguez-Palmero, M. Balcells, M. Prieto, D. Cristóbal-Hornillos, **P. Erwin**, and M. C. Eliche-Moral, 2005. In *Proceedings of SEA/JENAM 2004, The Many Scales of the Universe, Joint European and National Astronomy Meeting*, ed. J. C. del Toro Iniesta et al. (Kluwer), in press.
26. “Stellar Masses of Star-Forming Galaxies at $0.3 < z < 1.2$ in the COSMOS Survey,” D. Cristóbal-Hornillos, M. Balcells, M. Prieto, R. Guzmán, M. C. Eliche-Moral, **P. Erwin**, and L. Domínguez-Palmero, 2005. *II International GTC Workshop: Science with GTC First-Light Instruments and the LMT, RevMexAA (SC)*, 24, eds. A. M. Hidalgo-Gómez, J. J. González, J. M. Rodríguez Espinosa, & S. Torres-Peimbert, 227.
27. “The Central Bulges of Galaxies at $0.3 < z < 1.2$,” Lilian Domínguez-Palmero, M. Balcells, M. Prieto, D. Cristóbal-Hornillos, **P. Erwin**, and M. C. Eliche-Moral, 2005. *II International GTC Workshop: Science with GTC First-Light Instruments and the LMT, RevMexAA (SC)*, 24, eds. A. M. Hidalgo-Gómez et al., 233.
28. “The EROs at $z < 1.5$ in the Groth-Westphal field of the GOYA Survey,” M. Prieto, M. Balcells, L. Domínguez-Palmero, D. Cristóbal-Hornillos, **P. Erwin**, M. C. Eliche-Moral, and D. Abreu, 2005. *II International GTC Workshop: Science with GTC First-Light Instruments and the LMT, RevMexAA (SC)*, 24, eds. A. M. Hidalgo-Gómez et al., 270.
29. “Pseudobulges in Barred S0 Galaxies,” **Peter Erwin**, John E. Beckman, and Juan Carlos Vega Beltrán, 2004. In *Penetrating Bars through Masks of Cosmic Dust: The Hubble Tuning Fork Strikes a New Note*, ed. D. L. Block, I. Puerari, K. C. Freeman, R. Groess, & E. K. Block (Dordrecht: Springer), 775.
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