

## Dawn K. Erb

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### Employment

Assistant Professor, University of Wisconsin Milwaukee Department of Physics, 2010–  
Spitzer Postdoctoral Fellow, University of California at Santa Barbara, 2008–2010  
CfA Postdoctoral Fellow, Harvard-Smithsonian Center for Astrophysics, 2005–2008

### Education

Ph.D. Astrophysics, California Institute of Technology, 2005

*Thesis Title:*

“The Properties of Star-Forming Galaxies at  $z \sim 2$ :  
Kinematics, Stellar Populations, and Metallicities”

*Research Advisor:* Professor Charles C. Steidel

B.S. Physics, Summa Cum Laude, University of Washington, 2000

B.S. Astronomy, Summa Cum Laude, University of Washington, 2000

### Research Interests

Galaxy formation and evolution

Kinematics, chemical evolution and stellar populations of galaxies at high redshift

Feedback processes in starburst galaxies

Gas ejection and accretion in high redshift galaxies

Evolution of the intergalactic medium at high redshift

### Awards and Honors

Spitzer Fellowship, 2008

Center for Astrophysics Fellowship, 2005

Holloway Fellowship, Caltech, 2001

Baer Prize in Astronomy, University of Washington, 2000

Higgs-Osborn Prize in Experimental Physics, University of Washington, 2000

## Successful Telescope Proposals and Grants

Principal Investigator:

- University of Wisconsin Milwaukee Research Grant Initiative, 2010
- Subaru Observatory (MOIRCS)
- NOAO (Subaru MOIRCS)
- Magellan Telescopes (IMACS, PANIC, LDSS3)
- Spitzer Space Telescope (IRAC)

Co-Investigator, proposal author:

- Keck Observatory (NIRSPEC, OSIRIS, DEIMOS)
- Palomar Observatory (WIRC)
- Hubble Space Telescope (archival proposal)

## Service

*Spitzer Space Telescope* review panel, 2010

NSF review panel, 2007, 2008, 2010

*Hubble Space Telescope* review panel, 2006

Peer reviewer, 2004 – present:

*The Astrophysical Journal*

*The Astrophysical Journal Letters*

*The Astronomical Journal*

*Monthly Notices of the Royal Astronomical Society*

*Nature*

*Publications of the Astronomical Society of the Pacific*

## Professional Affiliations

Member, American Astronomical Society, 2000 –

**Refereed Publications**

1. “Physical Conditions in a Young, Unreddened, Low Metallicity Galaxy at High Redshift”, **D.K. Erb**, M. Pettini, A.E. Shapley, C.C. Steidel, D.R. Law, N.A. Reddy. 2010, *The Astrophysical Journal*, in press, arXiv:1006.5456
2. “The Structure and Kinematics of the Circumgalactic Medium from Far-ultraviolet Spectra of  $z \simeq 2\text{--}3$  Galaxies”, C.C. Steidel, **D.K. Erb**, A.E. Shapley, M. Pettini, N.A. Reddy, M. Bogosavljević, G.C. Rudie, O. Rakic. 2010, *The Astrophysical Journal*, 717, 289
3. “Dust Obscuration and Metallicity at High Redshift: New Inferences from UV,  $H\alpha$ , and  $8\ \mu\text{m}$  Observations of  $z \sim 2$  Star-forming Galaxies”, N.A. Reddy, **D.K. Erb**, M. Pettini, C.C. Steidel, A.E. Shapley. 2010, *The Astrophysical Journal*, 712, 1070
4. “The Relationship between Stellar Populations and  $\text{Ly}\alpha$  Emission in Lyman Break Galaxies”, K.A. Kornei, A.E. Shapley, **D.K. Erb**, C.C. Steidel, N.A. Reddy, M. Pettini, M. Bogosavljević. 2010, *The Astrophysical Journal*, 711, 693
5. “Excess AGN activity in the  $z = 2.30$  Protocluster in HS 1700+64”, J.A. Digby-North, K. Nandra, E.S. Laird, C.C. Steidel, A. Georgakakis, M. Bogosavljević, **D.K. Erb**, A.E. Shapley, N.A. Reddy, J. Aird. 2010, *Monthly Notices of the Royal Astronomical Society*, in press
6. “The SINS Survey: SINFONI Integral Field Spectroscopy of  $z \sim 2$  Star-forming Galaxies”, N.M. Förster Schreiber, R. Genzel, N. Bouch, G. Cresci, R. Davies, P. Buschkamp, K.L. Shapiro, L. Tacconi, E.K.S. Hicks, S. Genel, A.E. Shapley, **D.K. Erb**, C.C. Steidel, D. Lutz, F. Eisenhauer, S. Gillessen, A. Sternberg, A. Renzini, A. Cimatti, E. Daddi, J. Kurk, S. Lilly, X. Kong, M.D. Lehnert, N. Nesvadba, A. Verma, H. McCracken, N. Arimoto, M. Mignoli, M. Onodera. 2009, *The Astrophysical Journal*, 706, 1364
7. “The SINS Survey: Broad  $H\alpha$  Emission in High-Redshift Star-Forming Galaxies”, K. L. Shapiro, R. Genzel, E. Quataert, N. M. Förster Schreiber, R. Davies, L. Tacconi, L. Armus, N. Bouché, P. Buschkamp, A. Cimatti, G. Cresci, E. Daddi, F. Eisenhauer, **D. K. Erb**, S. Genel, E. K. S. Hicks, S. J. Lilly, D. Lutz, A. Renzini, A. Shapley, C. C. Steidel, and A. Sternberg, 2009, *The Astrophysical Journal*, 701, 955
8. “The SINS survey: modeling the dynamics of  $z \sim 2$  galaxies and the high- $z$  Tully-Fisher relation”, G. Cresci, E. K. S. Hicks, R. Genzel, N. M. Förster Schreiber, R. Davies, N. Bouché, P. Buschkamp, S. Genel, K. Shapiro, L. Tacconi, J. Sommer-Larsen, A. Burkert, F. Eisenhauer, O. Gerhard, D. Lutz, T. Naab, A. Sternberg, A. Cimatti, E. Daddi, **D. K. Erb**, J. Kurk, S. L. Lilly, A. Renzini, A. Shapley, C. C. Steidel, and K. Caputi, 2009, *The Astrophysical Journal*, 697, 115
9. “The Kiloparsec-Scale Kinematics of High-Redshift Star-Forming Galaxies”, D. R. Law, C. C. Steidel, **D. K. Erb**, J. E. Larkin, M. Pettini, A. E. Shapley, and S. A. Wright, 2009, *The Astrophysical Journal*, 697, 2057
10. “From Rings to Bulges: Evidence for Rapid Secular Galaxy Evolution at  $z \sim 2$  from Integral Field Spectroscopy in the SINS Survey”, R. Genzel, A. Burkert, N. Bouché, G. Cresci, N. M.

- Förster Schreiber, A. Shapley, K. Shapiro, L. J. Tacconi, P. Buschkamp, A. Cimatti, E. Daddi, R. Davies, F. Eisenhauer, **D. K. Erb**, S. Genel, O. Gerhard, E. Hicks, D. Lutz, T. Naab, T. Ott, S. Rabien, A. Renzini, C. C. Steidel, A. Sternberg, and S. J. Lilly, 2008, *The Astrophysical Journal*, 687, 59
11. “Dynamics of Galactic Disks and Mergers at  $z \sim 1.6$ : Spatially Resolved Spectroscopy with Keck Laser Guide Star Adaptive Optics”, S. A. Wright, J. E. Larkin, D. R. Law, C. C. Steidel, A. E. Shapley, and **D. K. Erb**, 2008, *The Astrophysical Journal*, 699, 421
  12. “Kinometry of SINS High-Redshift Star-Forming Galaxies: Distinguishing Rotating Disks from Major Mergers”, K. L. Shapiro, R. Genzel, N. M. Förster Schreiber, L. J. Tacconi, N. Bouché, G. Cresci, R. Davies, F. Eisenhauer, P. H. Johansson, D. Krajnović, D. Lutz, T. Naab, N. Arimoto, S. Arribas, A. Cimatti, L. Colina, E. Daddi, O. Daigle, **D.K. Erb**, O. Hernandez, X. Kong, M. Mignoli, M. Onodera, A. Renzini, A. Shapley, and C. Steidel, 2008, *The Astrophysical Journal*, 682, 231
  13. “A Model for Star Formation, Gas Flows and Chemical Evolution in Galaxies at High Redshifts” **D. K. Erb**. 2008, *The Astrophysical Journal*, 674, 151
  14. “Submillimeter Galaxies at  $z \sim 2$ : Evidence for Major Mergers and Constraints on Lifetimes, IMF, and CO-H<sub>2</sub> Conversion Factor” L. J. Tacconi, R. Genzel, I. Smail, R. Neri, S. C. Chapman, R. J. Ivison, A. Blain, P. Cox, A. Omont, F. Bertoldi, T. Greve, N. M. Förster Schreiber, S. Genel, D. Lutz, A. M. Swinbank, A. E. Shapley, **D. K. Erb**, A. Cimatti, E. Daddi, A. J. Baker. 2008, *The Astrophysical Journal*, 680, 246
  15. “Multi-Wavelength Constraints on the Cosmic Star Formation History from Spectroscopy: the Rest-Frame UV, H $\alpha$ , and Infrared Luminosity Functions at Redshifts  $1.9 < z < 3.4$ ” N. A. Reddy, C. C. Steidel, M. Pettini, K. L. Adelberger, A. E. Shapley, **D. K. Erb**, M. Dickinson. 2008, *The Astrophysical Journal*, 175, 48
  16. “Integral Field Spectroscopy of High-Redshift Star Forming Galaxies with Laser Guided Adaptive Optics: Evidence for Dispersion-Dominated Kinematics” D. R. Law, C. C. Steidel, **D. K. Erb**, J. E. Larkin, M. Pettini, A. E. Shapley, S. A. Wright. 2007, *The Astrophysical Journal*, 669, 929
  17. “The Sightline to Q2343-BX415: Clues to Galaxy Formation in a Quasar Environment” S. A. Rix, M. Pettini, C. C. Steidel, N. A. Reddy, K. L. Adelberger, **D. K. Erb**, A. E. Shapley. 2007, *The Astrophysical Journal*, 670, 15
  18. “Morphologies of Galaxies in and around a Protocluster at  $z = 2.300$ ” A. H. G. Peter, A. E. Shapley, D. R. Law, C. C. Steidel, **D. K. Erb**, N. A. Reddy, M. Pettini. 2007, *The Astrophysical Journal*, 668, 23
  19. “Dynamical Properties of  $z \sim 2$  Star Forming Galaxies and a Universal Star Formation Relation” N. Bouche, G. Cresci, R. Davies, F. Eisenhauer, N. M. Forster Schreiber, R. Genzel, S. Gillessen, M. Lehnert, D. Lutz, N. Nesvadba, K. L. Shapiro, A. Sternberg, L. J. Tacconi, A. Verma, A. Cimatti, E. Daddi, A. Renzini, **D. K. Erb**, A. Shapley, C. C. Steidel. 2007, *The Astrophysical Journal*, 671, 303

20. “Lyman break galaxies: A ten-year perspective”, M. Pettini, C.C. Steidel, K.L. Adelberger, M. Dickinson, **D.K. Erb**, M. Giavalisco, D.R. Law, N.A. Reddy, A.E. Shapley. 2007, *Il Nuovo Cimento B*, 122, 1043
21. “Lost and Found: A New Position and Infrared Counterpart for the X-Ray Binary Scutum X-1” D. L. Kaplan, A. M. Levine, D. Chakrabarty, E. H. Morgan, **D. K. Erb**, B. M. Gaensler, D.-S. Moon, P. B. Cameron. 2007, *The Astrophysical Journal*, 661, 437
22. “Integral Field Spectroscopy of a Candidate Disk Galaxy at  $z \sim 1.5$  using Laser Guide Star Adaptive Optics” S. A. Wright, J. E. Larkin, M. Barczys, **D. K. Erb**, C. Iserlohe, A. Krabbe, D. R. Law, M. W. McElwain, A. Quirrenbach, C. C. Steidel, J. Weiss. 2007, *The Astrophysical Journal*, 658, 78
23. “The Physical Nature of Rest-UV Galaxy Morphology During the Peak Epoch of Galaxy Formation” D. R. Law, C. C. Steidel, **D. K. Erb**, M. Pettini, N. A. Reddy, A. E. Shapley, K. L. Adelberger, D. J. Simenc. 2007, *The Astrophysical Journal*, 656, 1
24. “A Spectroscopic Survey of Redshift  $1.4 < z < 3.0$  Galaxies in the Goods-North Field: Survey Description, Catalogs, and Properties” N. A. Reddy, C. C. Steidel, **D. K. Erb**, A. E. Shapley, M. Pettini. 2006, *The Astrophysical Journal*, 653, 1004
25. “The Direct Detection of Lyman-Continuum Emission from Star-forming Galaxies at  $z \sim 3$ ” A. E. Shapley, C. C. Steidel, M. Pettini, K. L. Adelberger, **D. K. Erb**. 2006, *The Astrophysical Journal*, 651, 688
26. “The Stellar, Gas and Dynamical Masses of Star-Forming Galaxies at  $z \sim 2$ ” **D. K. Erb**, C. C. Steidel, A. E. Shapley, M. Pettini, N. A. Reddy, K. L. Adelberger. 2006, *The Astrophysical Journal*, 647, 128
27. “H $\alpha$  Observations of a Large Sample of Galaxies at  $z \sim 2$ : Implications for Star Formation in High Redshift Galaxies” **D. K. Erb**, C. C. Steidel, A. E. Shapley, M. Pettini, N. A. Reddy, K. L. Adelberger. 2006, *The Astrophysical Journal*, 644, 813
28. “The Mass-Metallicity Relation at  $z \gtrsim 2$ ” **D. K. Erb**, A. E. Shapley, M. Pettini, C. C. Steidel, N. A. Reddy, K. L. Adelberger. 2006, *The Astrophysical Journal*, 644, 813
29. “SINFONI Integral Field Spectroscopy of  $z \sim 2$  UV-selected Galaxies: Rotation Curves and Dynamical Evolution” N. M. Förster Schreiber, R. Genzel, M.D. Lehnert, N. Bouché, A. Verma, **D. K. Erb**, A. E. Shapley et al. 2006, *The Astrophysical Journal*, 645, 1062
30. “Star Formation and Extinction in Redshift  $z \sim 2$  Galaxies: Inferences from *Spitzer* MIPS Observations” N. A. Reddy, C. C. Steidel, D. Fadda, L. Yan, M. Pettini, A. E. Shapley, **D. K. Erb**, K. L. Adelberger. 2006, *The Astrophysical Journal*, 644, 792
31. “Predictions and Strategies for Integral-Field Spectroscopy of High-Redshift Galaxies” D. R. Law, C. C. Steidel, **D. K. Erb**. 2006, *The Astronomical Journal*, 131, 70
32. “A Census of Optical and Near-Infrared Selected Star-forming and Passively Evolving Galaxies at Redshift  $z \sim 2$ ” N. A. Reddy, **D. K. Erb**, C. C. Steidel, A. E. Shapley, K. L. Adelberger, M. Pettini. 2005, *The Astrophysical Journal*, 633, 748

33. “The Connection between Galaxies and Intergalactic Absorption Lines at Redshift  $2 \lesssim z \lesssim 3$ ” K. L. Adelberger, A. E. Shapley, C. C. Steidel, M. Pettini, **D. K. Erb**, N. A. Reddy. 2005, *The Astrophysical Journal*, 629, 636
34. “Ultraviolet to Mid-Infrared Observations of Star-Forming Galaxies at  $z \sim 2$ : Stellar Masses and Stellar Populations” A. E. Shapley, C. C. Steidel, **D. K. Erb**, N. A. Reddy, M. Pettini, K. L. Adelberger, P. Barmby, J. Huang. 2005, *The Astrophysical Journal*, 626, 698
35. “Spectroscopic Identification of a Protocluster at  $z = 2.300$ : Environmental Dependence of Galaxy Properties at High Redshift” C. C. Steidel, K. L. Adelberger, A. E. Shapley, **D. K. Erb**, N. A. Reddy, M. Pettini. 2005, *The Astrophysical Journal*, 626, 44
36. “Strong Spatial Clustering of UV-Selected Galaxies with Magnitude  $K_s < 20.5$  and Redshift  $z \sim 2$ ” K. L. Adelberger, **D. K. Erb**, C. C. Steidel, A. E. Shapley, M. Pettini, N. A. Reddy. 2005, *The Astrophysical Journal*, 620, 75
37. “The Spatial Clustering of Star-Forming Galaxies at Redshifts  $1.4 \lesssim z \lesssim 3.5$ ” K. L. Adelberger, C. C. Steidel, M. Pettini, A. E. Shapley, N. A. Reddy, **D. K. Erb**. 2005, *The Astrophysical Journal*, 619, 697
38. “Deep Mid-Infrared Observations of Lyman Break Galaxies” P. Barmby, J.-S. Huang, G. G. Fazio, J. A. Surace, R. G. Arendt, J. L. Hora, M. A. Pahre, K. L. Adelberger, P. Eisenhardt, **D. K. Erb**, M. Pettini, W. T. Reach, N. A. Reddy, A. E. Shapley, C. C. Steidel, D. Stern, Z. Wang, S. P. Willner. 2004, *The Astrophysical Journal Supplement*, 154, 97
39. “The Kinematics of Morphologically Selected  $z \sim 2$  Galaxies in the GOODS-North Field” **D. K. Erb**, C. C. Steidel, A. E. Shapley, M. Pettini, K. L. Adelberger. 2004, *The Astrophysical Journal*, 612, 122
40. “Evidence for Solar Metallicities in Massive Star-forming Galaxies at  $z \gtrsim 2$ ” A. E. Shapley, **D. K. Erb**, M. Pettini, C. C. Steidel, K. L. Adelberger. 2004, *The Astrophysical Journal*, 612, 108
41. “Optical Selection of Star-forming Galaxies at Redshifts  $1 < z < 3$ ” K. L. Adelberger, C. C. Steidel, A. E. Shapley, M. P. Hunt, **D. K. Erb**, N. A. Reddy, M. Pettini. 2004, *The Astrophysical Journal*, 607, 226
42. “A Survey of Star-forming Galaxies in the  $1.4 \lesssim z \lesssim 2.5$  Redshift Desert: Overview” C. C. Steidel, A. E. Shapley, M. Pettini, K. L. Adelberger, **D. K. Erb**, N. A. Reddy, M. P. Hunt. 2004, *The Astrophysical Journal*, 604, 534.
43. “H $\alpha$  Spectroscopy of Galaxies at  $z > 2$ : Kinematics and Star Formation” **D. K. Erb**, A. E. Shapley, C. C. Steidel, M. Pettini, K. L. Adelberger, M. P. Hunt, A. F. M. Moorwood, J.-G. Cuby. 2003, *The Astrophysical Journal*, 591, 101
44. “X-Ray/Optical Studies of Two Outbursts of the Intermediate Polar YY (DO) Draconis” P. Szkody, K. Nishikida, **D. K. Erb**, K. Mukai, C. Hellier, M. Uemura, T. Kato, E. Pavlenko, N. Katysheva, S. Shugarov, L. Cook. 2002, *The Astronomical Journal*, 123, 413

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45. “The Intriguing New Cataclysmic Variable KUV 03580+0614” P. Szkody, B. Gänsicke, R. E. Fried, U. Heber, **D. K. Erb**. 2001, *Publications of the Astronomical Society of the Pacific*, 113, 1215.