

# David R. Law

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## I. EDUCATION:

2003-2009: Ph.D. Astrophysics, CALIFORNIA INSTITUTE OF TECHNOLOGY  
Defended July 2008

Advisor: Professor Charles C. Steidel

*“The Kiloparsec-Scale Structure and Kinematics of High-Redshift Star-Forming Galaxies”*

1999-2003: B.A. Astronomy-Physics, Summa Cum Laude, Minor Mathematics, UNIVERSITY OF VIRGINIA

Advisor: Professor Steven R. Majewski

*“Modeling the Tidal Tails of the Sagittarius Dwarf Galaxy”*

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## II. RESEARCH INTERESTS:

Galaxy formation and evolution

Kinematics/morphology of high-redshift galaxies

Milky Way structure; dynamics of Local Group galaxies

Integral-field spectroscopy and laser-guided adaptive optics

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## III. POSITIONS:

2008-present: Hubble Postdoctoral Fellow, UCLA

2003-2008: Graduate research student, CALTECH

2003: Summer Research Assistant, UNIVERSITY OF VIRGINIA (*Advisor: Dr. Steven Majewski*)

2002: Summer Research Assistant, UNIVERSITY OF VIRGINIA (*Advisor: Dr. Steven Majewski*)

2001: Summer Research Assistant (REU), NORTHERN ARIZONA UNIVERSITY  
(*Advisor: Dr. Kathleen DeGioia-Eastwood*)

2000: Summer Research Assistant (REU), MIT HAYSTACK OBSERVATORY (*Advisor: Dr. Colin Lonsdale*)

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## IV. AWARDS AND HONORS:

2008: Hubble Fellowship, UCLA

2004: Holloway Fellowship, CALTECH

2003: D. Nelson Limber Prize, UNIVERSITY OF VIRGINIA

2003: Small Research Fellowship, UNIVERSITY OF VIRGINIA

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## V. PROFESSIONAL SOCIETIES AND SERVICE:

2009: Developed OSIRIS (infrared IFU) data simulation package for Keck Observatory

2008-present: Referee for the Astrophysical Journal

2008-present: Science team member: Thirty Meter Telescope, Infrared Imaging Spectrograph (IRIS)

2007: Science Advisor: Keck next-generation adaptive optics program

2004-present: Member of the American Astronomical Society

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## VI. TEACHING AND OUTREACH:

- 2010: Invited speaker, Ventura County Astronomical Society (scheduled)  
2006-2007: Co-advised (with C. Steidel) senior thesis research by a CALTECH undergraduate  
2005: Teaching Assistant, *Structure and Dynamics of Galaxies*, CALTECH (graduate level)  
2005: Teaching Assistant, *Galaxies and Cosmology*, CALTECH  
2004,2005: Teaching Assistant, *Astronomical Measurements and Instrumentation*, CALTECH (graduate level)  
2002-2003: Public Night Telescope Operator, MCCORMICK OBSERVATORY
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## VII. GRANT AND PROPOSAL HISTORY:

- 2009-2010: Hubble Space Telescope: Cycle 17 (WFC3/IR), PI  
42 Orbits, GO-11694, Allocation  $\sim$  \$150,000  
*Mapping the Interaction between High-Redshift Galaxies and the Intergalactic Environment*
- 2009-2010: Hubble Space Telescope: Cycle 17 (WFC3/UVIS), CoI  
30 Orbits, GO-11638, Allocation  $\sim$  \$120,000  
*Illuminating the HI Structure of a Proto-cluster Region at  $z = 2.84$*
- 2008-2010: STSCI Hubble Fellowship Program, PI  
HF-01221, Allocation  $\sim$  \$300,000  
*Understanding the Complex Gaseous Environment of Galaxies at  $z \sim 2 - 3$*
- 2009: W.M. Keck Observatory (NIRC2), CoI  
1 night  
*Optical Morphologies of Star-Forming Galaxies at  $z \sim 2$*
- 2008-2009: W.M. Keck Observatory (OSIRIS), CoI  
5 nights  
*Mapping Star Formation in Faint QSO Host Galaxies at  $z \sim 2$*
- 2005-2008: W.M. Keck Observatory (OSIRIS), CoI  
17 nights  
*Spatially Resolved Kinematics of Star-Forming Galaxies at  $z \sim 2$*
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## VIII. OBSERVATIONAL AND TECHNICAL EXPERIENCE [NIGHTS]:

Over 50 nights experience with optical and near-IR imaging, spectroscopy, and laser-assisted adaptive optics.

Keck Observatory (Keck I/II: NIRC2[1], OSIRIS/LGSAO[23], NIRSPEC[9], LRIS[3])

Palomar Observatory (200" Hale: WIRC[16], LFC[1])

Cerro Tololo Interamerican Observatory (4m Blanco, 1.5m: CSPEC[4], MOSAIC[6])

Las Campanas Observatory (100" duPont[5])

Hubble Space Telescope (ACS, WFPC2)

Experience with multiple major programming languages and computational N-body simulations:

C, C++, FORTRAN, IDL, IRAF, HTML

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IX. SELECTED RECENT TALKS:

- COLLOQUIUM SPEAKER at New York University: New York, 2009  
*Evidence for a Triaxial Milky Way dark matter halo*
- COLLOQUIUM SPEAKER at the Herzberg Institute of Astrophysics: Victoria BC, 2009  
*Kiloparsec-Scale Kinematics in High Redshift Star-Forming Galaxies*
- COLLOQUIUM SPEAKER at the University of California: San Diego, 2007  
*Spatially Resolved Kinematics of Star-Forming Galaxies in the Early Universe*
- INVITED TALK at “Science in the Era of TMT”, Irvine, CA, 2007  
*TMT: Science Goals and Design Requirements for IFU Studies of High Redshift Galaxies*

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X. PUBLICATIONS:

LEAD AUTHOR on **8** Refereed Publications (ASTROPHYSICAL JOURNAL, ASTRONOMICAL JOURNAL)

CO-AUTHOR on **11** Additional Refereed Publications

20. **Law, D. R.**, and Majewski, S.R. 2010, submitted to ApJ.  
*“The Sagittarius Dwarf Galaxy: a Model for Evolution in a Triaxial Milky Way Halo.”*
19. **Law, D. R.**, Majewski, S.R., and Johnston, K.V. 2009, ApJL 703, 67.  
*“Evidence for a Triaxial Milky Way Dark Matter Halo from the Sagittarius Stellar Tidal Stream.”*
18. **Law, D. R.**, Steidel, C.C., Erb, D.K., Larkin, J.E., Pettini, M., Shapley, A.E.,  
and Wright, S.A. 2009, ApJ, 697, 2057.  
*“The Kiloparsec-Scale Kinematics of High-Redshift Star-Forming Galaxies.”*
17. Basu-Zych, A., Goncalves, T., Overzier, R., **Law, D.R.**, Schiminovich, D., Heckman, T., Martin, C.,  
Wyder, T., and O’Dowd, M. 2009, ApJ, 699, 118  
*“An OSIRIS Study of the Gas Kinematics in a Sample of UV-Selected Galaxies: Evidence of  
‘Hot and Bothered’ Starbursts in the Local Universe.”*
16. Geha, M., Willman, B., Simon, J.D., Strigari, L.E., Kirby, E., **Law, D.R.**,  
and Strader, J. 2009, ApJ, 692, 1464  
*“The Least Luminous Galaxy: Spectroscopy of the Milky Way Dwarf Galaxy Segue I.”*
15. Wright, S.A., Larkin, J.E., **Law, D.R.**, Steidel, C.C., Shapley, A.E.,  
and Erb, D.K. 2009, ApJ, 699, 421  
*“Dynamics of Galactic Disks and Mergers at  $z \approx 1.6$ : Spatially Resolved Spectroscopy with Keck  
Laser Guide Star Adaptive Optics.”*
14. Chou, M., Majewski, S.R., Cunha, K., Smith, V.V., Patterson, R.J., Martinez-Delgado, D., **Law, D.R.**,  
Crane, J.D., Munoz, R.R., Lopez, R. G., Geisler, D., and Skrutskie, M.F. 2007, ApJ, 670, 346.  
*“A 2MASS All-Sky View of the Sagittarius Dwarf Galaxy: Variation of the Metallicity Distribution Function  
Along the Sagittarius Tidal Stream.”*
13. **Law, D.R.**, Steidel, C.C., Erb, D.K., Larkin, J.E., Pettini, M., Shapley, A.E., and Wright, S.A. 2007  
ApJ, 669, 929  
*“Integral Field Spectroscopy of High-Redshift Star Forming Galaxies with Laser Guided Adaptive Optics:  
Evidence for Dispersion-Dominated Kinematics.”*

12. Peter, A.H.G., Shapley, A.E., **Law, D.R.**, Steidel, C.C., Erb, D.K., Reddy, N.A., and Pettini, M. 2007 ApJ, 668, 23.  
*“Morphologies of Galaxies in and around a Protocluster at  $z=2.300$ ”*
11. Wright, S.A., Larkin, J.E., Barczys, M., Erb, D.K., Iserlohe, C., Krabbe, A., **Law, D.R.**, McElwain, M.W., Quirrenbach, A., Steidel, C.C., and Weiss, J. 2007, ApJ, 658, 78.  
*“Integral Field Spectroscopy of a Candidate Disk Galaxy at  $z 1.5$  using Laser Guide Star Adaptive Optics.”*
10. **Law, D.R.**, Steidel, C.C., Erb, D.K., Pettini, M., Reddy, N.A., Shapley, A.E., Adelberger, K.L., and Simenc, D.J. 2007, ApJ, 656, 1.  
*“The Physical Nature of Rest-UV Galaxy Morphology during the Peak Epoch of Galaxy Formation.”*
9. Casetti-Dinescu, D.I., Majewski, S.R., Girard, T.M., Carlin, J.L., van Altena, W.F., Patterson, R.J., and **Law, D.R.** 2006, AJ, 132, 2082.  
*“A Deep Proper-Motion Survey in Kapteyn Selected Areas: I. Survey Description and First Results for Stars in the Tidal Tail of Sagittarius and in the Monoceros Ring.”*
8. Majewski, S.R., **Law, D.R.**, Polak, A.A., and Patterson, R.J. 2006, ApJL, 637, 25.  
*“Measuring Fundamental Galactic Parameters with Stellar Tidal Streams and SIM PlanetQuest.”*
7. **Law, D.R.**, Steidel, C.C., and Erb, D.K. 2006, AJ, 131, 70.  
*“Predictions and Strategies for Integral-Field Spectroscopy of High-Redshift Galaxies.”*
6. **Law, D.R.**, Johnston, K.V., and Majewski, S.R. 2005, ApJ, 619, 807.  
*“A 2MASS All-Sky View of the Sagittarius Dwarf Galaxy: IV. Modeling the Sagittarius Tidal Tails.”*
5. Johnston, K.V., **Law, D.R.**, and Majewski, S.R. 2005, ApJ, 619, 800.  
*“A 2MASS All-Sky View of the Sagittarius Dwarf Galaxy: III. Constraints on the Flattening of the Galactic Halo.”*
4. Majewski, S.R., Kunkel, W.E., **Law, D.R.**, Patterson, R.J., Polak, A.A., Rocha-Pinto, H.J., Crane, J.D., Frinchaboy, P.M., Hummels, C.B., Johnston, K.V., Rhee, J., Skrutskie, M.F. and Weinberg, M.D. 2004, AJ, 128, 245.  
*“A 2MASS All-Sky View of the Sagittarius Dwarf Galaxy: II. Swope Telescope Spectroscopy of M Giant Stars in the Dynamically Cold Sagittarius Tidal Stream.”*
3. Crane, J.D., Majewski, S.R., Rocha-Pinto, H.J., Frinchaboy, P.M., Skrutskie, M.F., and **Law, D.R.** 2003, ApJL, 594, 119.  
*“Exploring Halo Substructure with Giant Stars: Spectroscopy of Stars in the Galactic Anticenter Stellar Structure.”*
2. **Law, D.R.**, Majewski, S.R., Skrutskie, M.F., Carpenter, J., and Ayub, H.F. 2003, AJ, 126, 1871.  
*“2MASS Studies of Differential Reddening Across Three Massive Globular Clusters.”*
1. **Law, D.R.**, DeGioia-Eastwood, K., and Moore, K.L. 2002, ApJ, 565, 1239.  
*“Empirical Bounds for the Ionizing Fluxes of Wolf-Rayet Stars.”*