

August 2015

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**Curriculum Vitae**  
Stephan Robert McCandliss  
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**Familial History**

1955/09/07	Born	Salinas California
1989/01/01	Married	Ann Marie McCandliss (nee Selander)
1989/11/10	Daughter	Rachel Pearl McCandliss
1992/05/26	Son	Ian Frederick McCandliss

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**Education**

1988	Ph.D. Astrophysics	University of Colorado, Boulder
1981	B.S. Physics	University of Washington, Seattle
1981	B.S. Astronomy	University of Washington, Seattle

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**Work History**

2015 – present	Director, Center for Astrophysical Sciences	Johns Hopkins University
2010 – present	Research Professor	Johns Hopkins University
2002 – 2010	Principal Research Scientist	Johns Hopkins University
1994 – 2002	Research Scientist	Johns Hopkins University
1988 – 1994	Associate Research Scientist	Johns Hopkins University
1981 – 1988	Ph.D. Candidate	University of Colorado, Boulder
1977 – 1981	Reader and Lab Assistant	University of Washington, Seattle

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**Primary Research Interests**

The ionization history of the universe.  
Spectral signatures of dust, molecules and atoms in astrophysical environments.  
Rapid-response space science missions and enabling low-cost access to space.  
Space-based astronomical instrumentation.

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**Service**

2013	HST Cycle 21 Proposal Review Panel
2011	NASA APRA/SAT UV/Vis Review Panel Chair
2011	NSF Astronomy Advanced Technology and Instrumentation Opt/IR Panel
2008 – present	Astrophysics Sounding Rocket Assessment Team
2008, 2009	NASA APRA UV/Vis Review Panels
2008, 2010	HST Cycle 17, 18 Proposal Reviews
2008	Spitzer Cycle 5 Proposal Review
1999 – 2003	Sounding Rocket Working Group

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**Memberships**

1986 – present	American Astronomical Society
1994 – 2003	Optical Society of America

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**Awards**

1998	Comet Hale-Bopp Sounding Rocket Campaign
1996	1995 Woomera Sounding Rocket Campaign

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## Responsibilities

- Develop science directions and goals, instrumentation innovations, data analysis techniques and work schedules for the sounding rocket group.
- Oversee the work of students, administrative assistants, technicians, engineers, and scientists working in small-team laboratory and field environments.
- Conduct reviews with experiment, launch and service providers, to ensure compliance with mission success criteria.
- Oversee calibration, integration, testing, performance verification and launch preparations.
- Make launch go/nogo decision.
- Develop follow-up observing projects to expand upon previous results.
- Author scientific papers, proposals, budgets, statements of work, and grant reports.
- Serve as a panelist on NASA science peer review and planning committees.

## Supervised Ph. D. Candidates and Graduates

2010 – present	Mr. Keith Redwine	Dissertation TBD
2007 – 2013	Dr. Brian T. Fleming	<b>The Search for Lyman Alpha Escape from Nearby Starforming Galaxies</b>
2003 – 2009	Dr. Roxana Lupu (BLAST/UPenn, SETI)	<b>Molecular and Dust Scattering Processes in Astrophysical Environments</b>
1999 – 2005	Professor Kevin France (COS/CU)	<b>Far-Ultraviolet Molecular Hydrogen Fluorescence in Photodissociation Regions</b>
1996 – 2001	Dr. Eric Burgh (SALT/SAL, COS/CU)	<b>Far-Ultraviolet Studies of Dust Extinction and Scattering</b>
1991 – 1998	Dr. Jason McPhate (SSL, Berkeley)	<b>Carbon Monoxide in Comets</b>
1990 – 1997	Dr. Patrick Morrissey (GSFC, GALEX/Cal Tech)	<b>Space Ultraviolet Spectroscopy and Imaging of Jupiter</b>
1988 – 1995	Dr. Melaquias Martinez (FUSE/JHU, private sector)	<b>Ly<math>\alpha</math> and Ly<math>\beta</math> in the Night Airglow Using the Faint-Object Telescope and the Hopkins Ultraviolet Telescope</b>
1988 – 1992	Dr. David Sahnou (FUSE/JHU, COS/STScI)	<b>Ultraviolet Spectroscopy of Comet Austin (1989c<sub>1</sub>) Using a Two-Dimensional Diode Array Detector</b>

**Sounding Rocket Missions**

2015	36.312UG	NGC 1365
2013	36.296UG	Comet C/2012 S1 (ISON)
2013	36.268UG	Starforming galaxy M61
2008	36.223UG	Great Nebula in Orion (M42)
2007	36.220UG	Trifid Nebula (M20)
2003	36.208UG	$\gamma$ Cas, IC 59 and IC 63
2001	36.198UG	Reflection Nebula IC 405
2000	36.186UG	Reflection Nebula NGC 2023
1999	36.136UG	Planetary Nebula NGC 6853 (M27, the Dumbbell)
1997	36.156UG	Comet Hale-Bopp
1996	36.115UG	Jovian aurorae
1995	36.132UG	30 Dor (from Woomera Asustralia)
1994	36.109UG	G191-B2B (reflight)
1992	36.085UG	G191-B2B Far-UV Calibration
1990	36.057UG	Io Torus (reflight)
1989	36.073UG	Comet Austin 1989c <sub>1</sub>
1988	36.045UG	Io Torus around Jupiter

**Ground-based Observing Programs**

2008 – 2012	APO DIS	Project Balmer
2007	Arecibo	HI Mapping of the PN M27
2006	APO DIS and NIC-FPS	Optical and IR Mapping of M27
1999, 2001, 2009	APO Echelle	M Giants and Symbiotics
1987	KPNO Fiber Optic Echelle	Wolf-Rayet and O-stars
1987	Sommers-Bausch B&L	Wolf-Rayet and O-stars

**JHU/GSFC Grant History – Total awards \$16.97 M since 1994****Space Instrumentation Grants**

2013 – 2016	NASA/APRA	\$792 K	PI	<b>Target of Opportunity – Far-UV Observations of Comet ISON with FORTIS</b>
2011 – 2015	NASA/APRA	\$3.21M	PI	<b>Rocket and Laboratory Studies in Astronomy with FORTIS</b>
2008 – 2011	NASA/APRA	\$1.62M	PI	<b>Rocket and Laboratory Experiments in Astronomy – Quantifying the Gas-to Dust Ratio and Ly<math>\alpha</math> Escape Fraction with FORTIS</b>
2004 – 2008	NASA/APRA	\$1.83M	PI	<b>Rocket and Laboratory Experiments in Astronomy – FORTIS: Pathfinder to the Lyman Continuum</b>
1996 – 2005	NASA/APRA	\$468K	PI	<b>FUV Windowless Lamps</b>
2015 – 2017	NASA/APRA	\$618K	Co-I w/ GSFC	<b>Advanced Microshutters for UV and Visible Astronomy from Space</b>
2008 – 2013	NASA/APRA	\$3.36M	Co-I	<b>Rocket and Laboratory Experiments in Astrophysics – ACCESS: Absolute Color Calibration for Standard Stars</b>
2007 –	DOE	\$199K	Co-I	<b>Calibration Monitor for Dark Energy Experiments</b>

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2008				
2000 – 2004	NASA/SARA	\$1.73M	Co-I	<b>Rocket and Laboratory Experiments in Astronomy – LIDOS</b>
2000 – 2001	NASA/NGST	\$170K	Co-I	<b>Comparative NIR Detector Characterization for NGST</b>
1997 – 2000	NASA	\$1.66M	Co-I	<b>Rocket and Laboratory Experiments in Astronomy</b>
1994 – 1996	NASA/JPL	\$63.5K	Co-I	<b>UV/Visible CCD Development</b>
2011-- 2014	NASA/APRA	\$503K	Collab GSFC	<b>Next Generation Microshutter Arrays</b>

### Space Observation Grants

2014 – 2016	HST	\$114K	PI	<b>High Efficiency SNAP Survey for Lyman Alpha Emitters at Low Redshift</b>
2012 – 2013	HST	\$53K	PI	<b>COS G140L CENWAV =800, a gapless low astigmatism mode for observations to the Lyman Limit</b>
2008 – 2009	HST	\$90K	PI	<b>Searching for Ly<math>\alpha</math> Emission from FUSE Lyman Continuum Candidates</b>
2006 – 2008	Spitzer	\$66K	PI	<b>A Comparison of the Infrared and Ultraviolet Properties of Photodissociation Regions</b>
2006 – 2008	FUSE	\$31K	PI	<b>Search for Continuum Emission from Bright Non-Zero Redshift Objects in the Sloan/GALEX Merged Catalog</b>
2005 – 2008	Spitzer	\$23K	PI	<b>A Mid and Far-Infrared Study of IC 405: PAH and Dust Emission</b>
2004 – 2005	FUSE	\$36K	PI	<b>Far-UV H<sub>2</sub> Emission in Planetary Nebulae</b>
2003 – 2004	FUSE	\$39K	PI	<b>Searching for Far Ultraviolet Fluorescence of Molecular Hydrogen in NGC 2023</b>
2003– 2005	FUSE	\$30K	PI	<b>Fluorescent Molecular Hydrogen in IC 405 and NGC 7023 – The Role of Environment</b>
2012- 2013	HST	\$25K	Co-I	<b>Do Lyman-alpha photons escape from star-forming galaxies through dust-holes?</b>
2009 – 2011	HST	\$18K	Co-I (adm-PI)	<b>EG And: Providing the Missing Link Required for Modelling Red Giant Mass-loss</b>
2007 – 2009	FUSE	\$9K	Co-I (adm-PI)	<b>Understanding Mass-loss in Cool Giants: The Wind of SY MUS</b>
2005 – 2007	FUSE	\$18K	Co-I (adm-PI)	<b>A FUV Survey of Extragalactic Symbiotic Binary Stars</b>
2005 – 2006	FUSE	\$12K	Co-I (adm-PI)	<b>Symbiotic Binary Stars: Probing the Winds of Cool Giants</b>
2005 – 2006	FUSE	\$22K	Co-I (adm-PI)	<b>Astro-Tomography of Symbiotic Binaries</b>
2002 – 2004	HST	\$40K	Co-I (adm-PI)	<b>UV Sounding of the M-Giant Atmosphere in the Symbiotic Binary EG-AND</b>
2001 – 2002	FUSE	\$53K	Co-I (adm-PI)	<b>Symbiotic Binaries for Wind Studies</b>
2000 – 2001	FUSE	\$41K	Co-I (adm-PI)	<b>Emission and Absorption Line Studies of Symbiotic Binaries: Mass Loss and Shock Diagnostics</b>

## Contacts

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### External:

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## Publications

### In Preparation

**McCandliss, S. R.**, B. Fleming, K. France, R. E. Lupu, B-G Andersson, G. R. Meurer, N. Bergvall, and J. Kruk **2015**, Lyman Alpha Emission and Absorption in Star-Forming Galaxies Derived from Far-UV Differential Photometry, (submitted ApJ 08-21-2015)

**McCandliss, S. R.**, P. D. Feldman, H. Weaver, B. Fleming, K. Redwine, M. J. Li, A. Kutyrev, S. H. Moseley **2015**, Far-Ultraviolet Observations of Comet C/2012 S1 (ISON) from FORTIS, (to be submitted to ApJ)

### White Papers

**McCandliss, S. R.**, B. Andersson, N. Bergvall, L. Bianchi, C. Bridge, M. Bogosavljevic, S. H. Cohen, J.-M. Deharveng, W. Van Dyke Dixon, H. Ferguson, P. Friedman, M. Hayes, J. C. Howk, A. Inoue, I. Iwata, M. E. Kaiser, G. Kriss, J. Kruk, A. S. Kutyrev, C. Leitherer, G. R. Meurer, J. X. Prochaska, G. Sonneborn, M. Stiavelli, H. I. Teplitz, and R. A. Windhorst **(9/2012)**, Project Lyman: Quantifying 11 Gyrs of Metagalactic Ionizing Background Evolution, arXiv:1209.3320

Tumlinson, J., A. Aloisi, G. Kriss, K. France, **S. McCandliss**, K. Sembach, A. Fox, T. Tripp, E. Jenkins, M. Beasley, C. Danforth, M. Shull, J. Stocke, N. Lehner, C. Howk, C. Froning, J. Green, C. Oliveira, A. Fullerton, B. Blair, J. Kruk, G. Sonneborn, S. Penton, B. Wakker, X. Prochaska, J. Vallergera, and P. Scowen **(9/2012)**, Unique Astrophysics in the Lyman Ultraviolet, arXiv:1209.3272

### Refereed Journals

Lupu, R. E., P. D. Feldman, **S. R. McCandliss**, and D. F. Strobel **2011**, Observations and modeling of H<sub>2</sub> fluorescence with partial frequency redistribution in giant planet atmospheres, ApJ 732, 37.

Feldman, P. D., **S. R. McCandliss**, J. P. Morgenthaler, C. M. Lisse, H. A. Weaver, and M. F. A'Hearn **2010**, Galaxy Evolution Explorer Observations of CS and OH Emission in Comet 9P/Tempel 1 During Deep Impact, ApJ 711, 1051-1056.

Fleming, B., K. France, R. E. Lupu, and **S. R. McCandliss** **2010**, Spitzer Mapping of Polycyclic Aromatic Hydrocarbon and H<sub>2</sub> Features in Photodissociation Regions, ApJ 725, 159-172.

**McCandliss, S. R.**, K. France, S. Osterman, J. C. Green, J. B. McPhate, and E. Wilkinson **2010**, Far-Ultraviolet Sensitivity of the Cosmic Origins Spectrograph, ApJ 709, L183-L187.

Feldman, P. D., R. E. Lupu, **S. R. McCandliss**, and H. A. Weaver **2009**, The Far-Ultraviolet Spectral Signatures of Formaldehyde and Carbon Dioxide in Comets, ApJ 699, 1104-1112

Crowley, C., B. R. Espey, and **S. R. McCandliss** **2008**, EG And: FUSE and HST/STIS Monitoring of an Eclipsing Symbiotic Binary, ApJ 675, 711-722

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Burgh, E. B., K. France, and **S. R. McCandliss 2007**, Direct Measurement of the Ratio of Carbon Monoxide to Molecular Hydrogen in the Diffuse Interstellar Medium, *ApJ* 658, 446-454

France, K., **S. R. McCandliss**, and R. E. Lupu **2007**, A Cometary Bow Shock and Mid-Infrared Emission Variations Revealed in Spitzer Observations of HD 34078 and IC 405, *ApJ* 655, 920-939

Feldman, P. D., **S. R. McCandliss**, M. Route, H. A. Weaver, M. F. A'Hearn, M. J. S. Belton, and K. J. Meech **2007**, Hubble Space Telescope observations of Comet 9P/Tempel 1 during the Deep Impact encounter, *Icar* 191, 276-385

**McCandliss, S. R.** and J. Kruk **2007**, Metal Absorption Profiles from the Central Star of the Planetary Nebula M27 (NGC 6853, PN G060.8-03.6, the Dumbbell): Photospheric and Nebular Line Identifications, *ApJS* 170, 126-151

**McCandliss, S. R.**, K. France, R. E. Lupu, E. B. Burgh, K. Sembach, J. Kruk, B.-G. Andersson, and P. D. Feldman **2007**, Molecular and Atomic Excitation Stratification in the Outflow of the Planetary Nebula M27, *ApJ* 659, 1291-1316

Feldman, P. D., R. E. Lupu, **S. R. McCandliss**, H. A. Weaver, M. F. A'Hearn, M. J. S. Belton, and K. J. Meech **2006**, Carbon Monoxide in Comet 9P/Tempel 1 before and after the Deep Impact Encounter, *ApJ* 647, L61-L64

Lupu, R. E., K. France, and **S. R. McCandliss 2006**, Discovery of Ly $\alpha$  pumped Molecular Hydrogen Emission in the Planetary Nebulae NGC 6853 and NGC 3132, *ApJ* 644, 981-989

Sokoloski, J. L., S. J. Kenyon, B. R. Espey, C. D. Keyes, **S. R. McCandliss**, A. K. H. Kong, J. P. Aufdenberg, A. V. Filippenko, W. Li, C. Brocksopp, C. R. Kaiser, P. A. Charles, M. P. Rupen, and R. P. S. Stone **2006**, A "Combination Nova" Outburst in Z Andromedae: Nuclear Shell Burning Triggered by a Disk Instability, *ApJ* 636, 1002-1019

France, K. and **S. R. McCandliss 2005**, Molecular Hydrogen in Orion as Observed by the Far Ultraviolet Spectroscopic Explorer, *ApJ* 629, L97-L100

France, K., B.-G. Andersson, **S. R. McCandliss**, and P. D. Feldman **2005**, Fluorescent Molecular Hydrogen Emission in IC 63: FUSE, Hopkins Ultraviolet Telescope, and Rocket Observations, *ApJ* 628, 750-757

Glazebrook, K., I. Baldry, W. Moos, J. Kruk, and **S. McCandliss 2005**, Monster redshift surveys through dispersive slitless imaging: The Baryon Oscillation Probe [review article], *NewAR* 49, 374-378

France, K., **S. R. McCandliss**, E. B. Burgh, and P. D. Feldman **2004**, Rocket and Far Ultraviolet Spectroscopic Explorer Observations of IC 405: Differential Extinction and Fluorescent Molecular Hydrogen, *ApJ* 616, 257-265

Knauth, D. C., B.-G. Andersson, **S. R. McCandliss**, and H. Warren Moos **2004**, The interstellar N<sub>2</sub> abundance towards HD 124314 from far-ultraviolet observations, *Nature* 429, 636-638

Knauth, D. C., B.-G. Andersson, **S. R. McCandliss**, and H. W. Moos **2003**, Potential Variations in the Interstellar N I Abundance, *ApJ* 596, L51-L54

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**McCandliss, S. R. 2003**, Molecular Hydrogen Optical Depth Templates for FUSE Data Analysis, *PASP* 115, 651–661

Burgh, E. B., **S. R. McCandliss**, and P. D. Feldman **2002**, Rocket Observations of Far- Ultraviolet Dust Scattering in NGC 2023, *ApJ* 575, 240–249

**McCandliss, S. R.**, E. B. Burgh, and P. D. Feldman **2001**, Ultraviolet groove efficiency of a holographic grating: implications for a dual-order spectrograph, *Appl. Opt.* 40, 2626–2642

Burgh, E. B., **S. R. McCandliss**, B.-G. Andersson, and P. D. Feldman **2000**, On the Correlation between CO Absorption and Far-Ultraviolet Nonlinear Extinction toward Galactic OB Stars, *ApJ* 541, 250–256

McPhate, J. B., P. D. Feldman, **S. R. McCandliss**, and E. B. Burgh **1999**, Rocket-borne Long-Slit Ultraviolet Spectroscopy of Comet Hale-Bopp, *ApJ* 521, 920–927

**McCandliss, S. R.**, J. B. McPhate, and P. D. Feldman **1998**, Narcissistic ghosts in Rowland-mounted, concave gratings with  $b = 0$ : a cautionary note, *Appl. Opt.* 37, 5070–5074

Massa, D., A. W. Fullerton, J. S. Nichols, S. P. Owocki, R. K. Prinja, N. St-Louis, A. J. Willis, B. Altner, C. T. Bolton, J. P. Cassinelli, D. Cohen, R. G. Cooper, A. Feldmeier, K. G. Gayley, T. Harries, S. R. Heap, R. N. Henriksen, I. D. Howarth, I. Hubeny, E. Kambe, L. Kaper, G. Koenigsberger, S. Marchenko, **S. R. McCandliss**, A. F. J. Moffat, T. Nugis, J. Puls, C. Robert, R. E. Schulte-Ladbeck, L. J. Smith, M. A. Smith, W. L. Waldron, and R. L. White **1995**, The IUE MEGA Campaign: Wind Variability and Rotation in Early-Type Stars, *ApJ* 452, L53

Morrissey, P. F., **S. R. McCandliss**, and P. D. Feldman **1995**, Vacuum-ultraviolet quantum efficiency of a thinned, backside-illuminated charge-coupled device. *ApOpt* 34, 4640–4650

Buss, R. H., M. Allen, **S. McCandliss**, J. Kruk, J. Liu, and T. Brown **1994**, Evolution of macromolecular dust: Far-ultraviolet spectral dust extinction and gas absorption of stellar light as measured with the Hopkins Ultraviolet Telescope, *ApJ* 430, 630–649

**McCandliss, S. R.**, B. Bohannon, C. Robert, and A. F. J. Moffat **1994**, Erratum: The 2.27 day period of WR-134 (HD 191765), *Ap&SS* 221, 155–167

Morrissey, P. F., **S. R. McCandliss**, P. D. Feldman, and S. D. Friedman **1994**, Vacuum-ultraviolet quantum efficiency of a phosphor-coated charge-coupled device, *ApOpt* 33, 2534–2538

Sahnow, D. J., P. D. Feldman, **S. R. McCandliss**, and E. F. Mackey **1994**, Two-dimensional intensified photodiode array detector for spaceflight use, *RSci* 65, 813–825

**McCandliss, S. R.**, R. H. Buss, W. P. Blair, C. W. Bowers, A. F. Davidsen, P. D. Feldman, and J. W. Kruk **1993**, The Spectrum of EZ Canis Majoris (HD 50896) to the Lyman Limit with the Hopkins Ultraviolet Telescope, *ApJ* 416, 372

Sahnow, D. J., P. D. Feldman, **S. R. McCandliss**, and M. E. Martinez **1993**, Long-slit ultraviolet spectroscopy of Comet Austin (1990 V), *Icar* 101, 71–83



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## Proceedings & Conferences

Weaver, H. A., M. F. A'Hearn, D. Bodewits, M. R. Combi, N. Dello Russo, P. D. Feldman, and **S. R. McCandliss 2014**, Ultraviolet Spectroscopy of Comet ISON (2012 S1) with the Hubble Space Telescope LPI 45, 2903

Weaver, H., M. A'Hearn, P. Feldman, D. Bodewits, M. Combi, N. Dello Russo, and **S. McCandliss 2014**, Ultraviolet spectroscopy of comet ISON (2012 S1) AMC 583

Feldman, P., **S. McCandliss**, H. Weaver, B. Fleming, K. Redwine, M. Li, A. Kutyrev, and S. Moseley **2014**, Far-ultraviolet observations of comet C/2012 S1 (ISON) with a sounding-rocket-borne instrument AMC 159

Kaiser, M. E., M. J. Morris, G. O. Peacock, **S. R. McCandliss**, B. J. Rauscher, R. A. Kimble, J. W. Kruk, R. Pelton, E. L. Wright, D. B. Mott, Y. Wen, P. D. Feldman, H. W. Moos, A. G. Riess, J. P. Gardner, D. J. Benford, B. E. Woodgate, R. Bohlin, S. E. Deustua, W. V. Dixon, D. J. Sahnou, R. Kurucz, M. Lampton, and S. Perlmutter **2014**, ACCESS: status and pre-flight performance SPIE 9143, 91434Y-10

Kaiser, M. E., M. J. Morris, J. Hansen, S. Jensen, **S. R. McCandliss**, B. J. Rauscher, R. A. Kimble, J. W. Kruk, R. Pelton, D. B. Mott, Y. Wen, J. P. Gardner, D. J. Benford, B. E. Woodgate, E. L. Wright, P. D. Feldman, H. W. Moos, A. G. Riess, R. Bohlin, S. E. Deustua, W. V. Dixon, D. J. Sahnou, R. Kurucz, M. Lampton, and S. Perlmutter **2013**, ACCESS: thermal mechanical design and performance SPIE 8860, 88600Y-13

Fleming, B. T., **S. R. McCandliss**, K. Redwine, M. E. Kaiser, J. Kruk, P. D. Feldman, A. S. Kutyrev, M. J. Li, S. H. Moseley, O. Siegmund, J. Vallergera, and A. Martin **2013**, Calibration and flight qualification of FORTIS SPIE 8859, 88590Q-12

Redwine, K., **S. R. McCandliss**, B. T. Fleming, and R. Pelton **2013**, Hydrogen cells as narrowband geocoronal Lyman-alpha rejection filters for astrophysical photometry SPIE 8859, 88590P-5

Kaiser, M. E., M. J. Morris, **S. R. McCandliss**, B. J. Rauscher, R. A. Kimble, J. W. Kruk, R. Pelton, D. B. Mott, Y. Wen, R. Foltz, M. A. Quijada, J. S. Gum, J. P. Gardner, D. M. Kahle, D. J. Benford, B. E. Woodgate, E. L. Wright, P. D. Feldman, M. Hart, H. W. Moos, A. G. Riess, R. Bohlin, S. E. Deustua, W. V. Dixon, D. J. Sahnou, R. Kurucz, M. Lampton, and S. Perlmutter **2012**, ACCESS: design and sub-system performance SPIE 8442, 844246-12

Fleming, B. T., **S. R. McCandliss**, M. E. Kaiser, J. Kruk, P. D. Feldman, A. S. Kutyrev, M. J. Li, D. A. Rapchun, E. Lyness, S. H. Moseley, O. Siegmund, J. Vallergera, and A. Martin **2011**, Fabrication and calibration of FORTIS, SPIE 8145, 81450B-11

Osterman, S., S. V. Penton, K. France, S. Béland, **S. McCandliss**, J. McPhate, and D. Massa **2010**, Observing with HST below 1150Å, Extending the Cosmic Origins Spectrograph Coverage to 900Å, arXiv:1012.5811 (2010 HST Calibration Workshop Proceedings talk)

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