

Curriculum Vitae

Kevin France

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Education:

Ph.D. – Astrophysics, Johns Hopkins University, 2006

Advisor: Paul D. Feldman

Title: “Far-Ultraviolet Molecular Hydrogen Fluorescence in
Photodissociation Regions”

B.A. – Physics and Astronomy, Boston University, 2000

magna cum laude with Distinction, College Prize in Astronomy

Professional Positions:

2015 – present: Assistant Professor, Department of Astrophysical and
Planetary Sciences & LASP – University of Colorado

2013 – 2015: Assistant Research Professor, Department of Astrophysical
and Planetary Sciences – University of Colorado

2013 – 2015: NASA Nancy Grace Roman Technology Fellow

2007 – 2014: Research Associate and Fellow, CASA – Colorado

2006 – 2007: Postdoctoral Fellow, CITA and Department of
Astronomy and Astrophysics, University of Toronto

2000 – 2006: Research Assistant, Sounding Rocket Group, Johns
Hopkins University

1998 – 2000: Research Assistant, Ultraviolet Research Group, Center for
Space Physics, Boston University

Science Team/Group Affiliations:

- Voting Member and UV spectrograph (LUMOS) lead – LUVVOIR Surveyor Science and Technology Definition Team
- Principal Investigator – University of Colorado Ultraviolet Rocket Group
- Project Scientist & Deputy-PI: Sub-Lyman- α Explorer (SubLymE) Small Explorer Mission Concept
- Principle Investigator – MUSCLES Treasury Survey, *Hubble*
- *HST*-Cosmic Origins Spectrograph Science Team
- *HST*-Cosmic Origins Spectrograph Instrument Development Team
- Principal Investigator – HEROICs Ultraviolet Detector Development
- Referee – The Astrophysical Journal / Letters, Applied Optics, Icarus
- Reviewer – NASA Postdoctoral Program, NASA NSTRF, NASA APRA
- *Hubble Space Telescope* Time Allocation Panel Reviewer
- University of Colorado Apache Point Observatory Time Allocation Committee
- American Astronomical Society

NASA Funded Science and Instrumentation Programs:

HST Cycle 24, 14633: “An *HST*-COS SNAP Study of Star-Planet Interactions”
(**PI-K. France**) – 80 orbits

HST Cycle 24, 14633: “The *HST*-ALMA connection: Transitional Disks in Lupus” (Admin **PI-K. France**) – 15 orbits

HST Cycle 23-mid, 14469: “The *HST*-ALMA connection: measuring the FUV spectrum of a newly discovered transition disk down to the H₂ and CO photodissociation regime” (**Admin PI-K. France**) – 5 orbits

HST Cycle 23, 14100: “A Direct Imaging Experiment to Determine the Origin of H₂ Emission from M dwarf Exoplanetary Systems” (**PI-K. France**) - 8 orbits

Astronomy and Physics Research and Analysis, 2015: “Development and Flight-testing of Astronomical Instrumentation for Future NASA Astrophysics Missions” (**PI- K. France**)

HST Cycle 22, 13650: “The MUSCLES Treasury Survey: Measuring the Ultraviolet Spectral Characteristics of Low-mass Exoplanet host Stars” (**PI-K. France**) – 125 orbits + *XMM* + *Chandra*

Chandra Cycle 16, 16200943: “X-ray MUSCLES” (**PI-K. France**) –120 ksec

Astronomy and Physics Research and Analysis, 2013: “Advanced Coatings Enabling High Performance Instruments for Astrophysics”
(PI- Nikzad, **Colorao PI – K. France**)

HST Cycle 21, 13372: “Mapping the magnetospheric structure at outburst of the pre-main sequence close binary AK Sco” (**Admin PI-K. France**) – 14 orbits

Nancy Grace Roman Technology Fellowship in Astrophysics 2013:
 “HEROIC Detector Development for Future UV/Visible Astronomy Missions” (PI – K. France)

Astronomy and Physics Research and Analysis, 2012: “Development and Flight-testing of Next Generation Technology for Ultraviolet Astronomy” (PI– K. France)

HST Cycle 20, 12876: “WH₂IPS: Warm H₂ in Protoplanetary Systems” (PI-K. France) – 22 orbits

Astronomy and Physics Research and Analysis, 2011: “Development of HEROICS: High-Sensitivity, High Dynamic Range Detector Systems for Ultraviolet Astronomy” (PI– K. France)

HST Cycle 19, 12464: “Project MUSCLES: Measuring the Ultraviolet Spectral Characteristics of Low-mass Exoplanetary Systems” (PI-K. France) – 14 orbits

Astronomy and Physics Research and Analysis, 2009: “Development and Flight Testing of High-Efficiency Echelles and Detectors for the Future of Ultraviolet Astronomy” (PI-Beasley, **science lead – K. France**)

Spitzer Cycle 3, P30696: “A Comparison of the Infrared and Ultraviolet Properties of Photodissociation Regions” (PI-McCandliss, **primary author-K. France**)

Spitzer Cycle 2, P20434: “A Mid and Far-Infrared Study of IC 405: PAH and Dust Emission in a Diverse Environment” (PI-McCandliss, **primary author-K. France**)

FUSE Cycle 8, H056: “Characterizing H₂ Fluorescence, Dust, and Diffuse Stellar Observations in the Magellanic Clouds” (PI-McCandliss, **primary author-K. France**) - 160 ks

FUSE Cycle 8, H058: “Expanded Lyman Continuum Search, 19 Far-UV Bright Galaxies above z=0.017” (PI-McCandliss) - 1.526 Ms

FUSE Cycle 6, F169: “Search for Lyman Continuum Emission from Bright Non-Zero Redshift Objects in the Sloan/GALEX Merged Catalogue” (PI-McCandliss)

FUSE Cycle 5, E120: “Far-Ultraviolet Signature of Molecular Hydrogen Emission in Planetary Nebulae: Evolving Density and Radiation Fields” (PI-McCandliss, **primary author-K. France**)

FUSE Cycle 4, D127: “Fluorescent Molecular Hydrogen in IC 405 and NGC 7023 - The Role of Environment” (PI-McCandliss, **primary author-K. France**)

Students, Postdocs Mentored/Supervised:

Postdoctoral

Brian Fleming – Ph.D. Johns Hopkins University, 2013

Publications: Fleming et al. 2015, 2016 (SPIE)

Sebastian Pineda – Ph.D. Caltech, 2016

Publications: Pineda et al. 2017 – ApJ, in prep.

Graduate

Roxana Lupu – Johns Hopkins University, supporting Ph.D. work (2009)

Publications: Lupu, France, & McCandliss, ApJ 2006

Eric Schindhelm – University of Colorado, Ph.D. (2012)

Publications: Schindhelm et al. – ApJ 2012a,b

Brian Fleming - Johns Hopkins University, supporting Ph.D. work (2013)

Publications: Fleming et al., - ApJ 2010; 2017 - submitted

Matthew McJunkin – University of Colorado, Comps-2 and Ph.D. (2016)

Publications: McJunkin, France et al. – ApJ 2013, 2014, 2016

Keri Hoadley – University of Colorado, Comps-2 and Ph.D. (2017)

Publications: Hoadley, et al. - ApJ and SPIE 2014, 2015, 2016, 2017

Parke Loyd – University of Colorado, Comps-2 and Ph.D. (2017)

Publications: Loyd & France – ApJS 2014, Loyd et al. - 2016, 2017

Christopher Moore – University of Colorado, NASA Space Technology

Research Fellow (France is PI of NSTRF), Ph.D. (2017)

Publications: Moore et al. – SPIE 2014, 2015, 2016, 2017

Jennifer Kulow – University of Colorado, Comps-2

Publications: Kulow et al. – ApJ 2014

Allison Youngblood – University of Colorado, Ph.D. (2017)

Publications: Youngblood et al, ApJ 2016, 2017; AJ 2017

Nick Kruczek – University of Colorado, Ph.D. (expected 2019)

Publications: Kruczek et al. - AJ 2017

Nicole Arulanantham – Comps-2 and Ph.D. (expected 2021)

Publications: Arulanantham et al. - ApJ 2017

Undergraduate

Nico Nell, Rachel Bushinsky, Eliot Kersgaard, Christian Carter, John Noonan (Undergraduate Honors Thesis), Jack Swanson, Devin Bazata

Select Refereed Publications (1st, 2nd, or 3rd author):

- 53) **K. France**, B. Fleming, K. Hoadley “CHISL: The Combined High-resolution and Imaging Spectrograph for the LUVVOIR Surveyor”, 2016, **JATIS**, v2(4)
- 52) R. Loyd, **K. France**, A. Youngblood, et al. “The MUSCLES Treasury Survey III: X-ray to Infrared Spectra of 11 M and K Stars Hosting Planets”, 2016, **ApJ**, in press

- 51) A. Youngblood, **K. France**, R. Loyd, et al. "The MUSCLES Treasury Survey II: Intrinsic Lyman Alpha and Extreme Ultraviolet Spectra of K and M Dwarfs with Exoplanets", 2016, **ApJ**, in press
- 50) **K. France**, K. Hoadley, B. Fleming et al. "The SLICE, CHESS, and SISTINE Ultraviolet Spectrographs: Rocket-Borne Instrumentation Supporting Future Astrophysics Missions", 2016, **JAI**, 540001
- 49) **K. France**, R. Loyd, A. Youngblood, et al. "The MUSCLES Treasury Survey I: Motivation and Overview", 2016, **ApJ**, v820
- 48) L. Fossati, **K. France**, T. Koskinen, et al. "Far-UV Spectroscopy of the Planet-hosting Star WASP-13: High-energy Irradiance, Distance, Age, Planetary Mass-loss Rate, and Circumstellar Environment", 2015, **ApJ**, v815
- 47) K. Hoadley, **K. France**, Alexander, R., McJunkin, M., and Schneider, P. C. "The Evolution of Inner Disk Gas in Transition Disks", 2015, **ApJ**, v812
- 46) P. C. Schneider, **K. France**, et al. "X-ray to NIR Emission from AA Tau During the Dim State", 2015, **A&A**, v584
- 45) **K. France**, R. McCray, C. Fransson, J. Larsson, et al. "Mapping High-velocity Ha and Ly α Emission from Supernova 1987A", 2015, **ApJL**, v801
- 44) **K. France**, G. Herczeg, M. McJunkin, S. Penton, "CO/H $_2$ Abundance Ratio $\approx 10^{-4}$ in a Protoplanetary Disk", 2014, **ApJ**, v794
- 43) **K. France**, J. L. Linsky, R. O. P. Loyd, "The ultraviolet radiation environment in the habitable zones around low-mass exoplanet host stars", 2014, **Ap&SS**, v354
- 42) J. Kulow, **K. France**, J. Linsky, and R. O. P., Loyd "Ly α Transit Spectroscopy and the Neutral Hydrogen Tail of the Hot Neptune GJ 436b", 2014, **ApJ**, v784
- 41) **K. France**, E. Schindhelm, E. Bergin, et al. "High-resolution Ultraviolet Radiation Fields of Classical T Tauri Stars", 2014, **ApJ**, v784
- 40) R. Loyd & **K. France** "Fluctuations and Flares in the Ultraviolet Line Emission of Cool Stars: Implications for Exoplanet Transit Observations", 2014, **ApJS**, v211

- 39) M. McJunkin, **K. France**, et al. "Direct Measurement of Interstellar Extinction toward Young Stars Using Atomic Hydrogen Ly α Absorption", 2014, **ApJ**, v780
- 38) F. Tian, **K. France**, et al. "High Stellar FUV/NUV Ratio and Oxygen Contents in the Atmospheres of Potentially Habitable Planets", 2014, **E&PSL**, 385
- 37) J. Linsky, J. Fontenla, and **K. France** "The Intrinsic Extreme Ultraviolet Fluxes of F5 V to M5 V Stars", 2014, **ApJ**, v780
- 36) C. Froning, T. Maccarone, **K. France**, et al. "Multiwavelength Observations of Swift J1753.5-0127", 2014, **ApJ**, v780
- 35) V. Vitale & **K. France** "X-ray Detection of GJ 581 and Simultaneous UV Observations", 2013, **A&A**, v558
- 34) **K. France** et al. "H₂ Excitation Structure on the Sightlines to δ Scorpii and ζ Ophiuci: First Results from the Sub-orbital Local Interstellar Cloud Experiment", 2013, **ApJL**, v772
- 33) C. Danforth, K. Nalewajko, **K. France**, and B. Keeney "A Fast Flare and Direct Redshift Constraint in Far-ultraviolet Spectra of the Blazar S5 0716+714", 2013, **ApJ**, v764
- 32) M. McJunkin, **K. France**, et al. "Probing the Inner Regions of Protoplanetary Disks with CO Absorption Line Spectroscopy", 2013, **ApJ**, v766
- 31) **K. France**, C. Froning, J. Linsky, et al. "The Ultraviolet Radiation Environment around M dwarf Exoplanet Host Stars", 2013, **ApJ**, v763
- 30) J. Linsky, **K. France**, and T. Ayres, "Computing Intrinsic Ly α Fluxes of F5 V to M5 V Stars", 2013, **ApJ**, v766
- 29) **K. France**, E. Schindhelm, G. Herczeg et al. "A *Hubble Space Telescope* Survey of H₂ Emission in the Circumstellar Environments of Young Stars", 2012, **ApJ**, v756
- 28) E. B. Burgh, **K. France**, and T. P. Snow "COS Observations of NGC 2024: An Indirect View Into the Heart of the Flame", 2012, **ApJL**, v755
- 27) E. Schindhelm, **K. France**, G. Herczeg, et al. "Lyman α Dominance of the Classical T Tauri Radiation Field", 2012, **ApJL**, v756

- 26) **K. France**, J. Linsky, F. Tian, C. Froning, and A. Roberge "Time-resolved Ultraviolet Spectroscopy of the M-dwarf GJ 876 Exoplanetary System", 2012, **ApJL**, v750
- 25) **K. France**, E. B. Burgh, G. J. Herczeg, et al. "CO and H₂ Absorption in the AA Tauri Circumstellar Disk ", 2012, **ApJ**, v744
- 24) E. Schindhelm, **K. France**, E. B. Burgh, et al. "Characterizing CO Fourth Positive Emission in Young Circumstellar Disks", 2012, **ApJ**, v746
- 23) **K. France**, R. McCray, S. Penton, R. Kirshner, et al. "HST-COS observations of Hydrogen, Helium, Carbon and Nitrogen Emission from the SN 1987A Reverse Shock", 2011, **ApJ**, v743
- 22) **K. France**, E. Schindhelm, E. B. Burgh, G. J. Herczeg, et al. "The Far-UV Continuum in Protoplanetary Disk Systems II: CO Fourth Positive Emission and Absorption", 2011, **ApJ**, v733
- 21) H. Yang, J. L. Linsky, and **K. France** "HST/COS Spectra of DF Tau and V4046 Sgr: First Detection of H₂ Absorption Against the Ly α Emission Line", 2011, **ApJL**, v730
- 20) **K. France**, H. Yang, and J. L. Linsky "The Far-UV Continuum in Protoplanetary Disk Systems I: Electron-Impact H₂ and Chromospheric Accretion", 2011, **ApJ**, v728
- 19) T. Ayres & **K. France** "Warm Coronal Rain on Young Solar Analog EK Draconis?", 2010, **ApJL**, v723
- 18) **K. France**, N. Nell, J. C. Green, and C. Leitherer "Diffuse Far-UV Line Emission from the Luminous Compact Blue Galaxy KISSR242", 2010, **ApJL**, v722
- 17) B. Fleming, **K. France**, S. R. McCandliss, R. E. Lupu "Spitzer Mapping of PAH and H₂ Features in Photodissociation Regions", 2010, **ApJ**, v725
- 16) **K. France**, R. McCray, K. Heng, R. P. Kirshner et al. "Observing SN 1987A with the Refurbished *Hubble Space Telescope*", 2010, **Science**, v329
- 15) J. M. Shull, **K. France**, C. W. Danforth, B. Smith, and J. Tumlinson "Hubble/COS Observations of the Quasar HE2347-4342: Probing the Epoch of Hell Patchy Reionization at Redshifts $z = 2.4 - 2.9$ ", 2010, **ApJ**, v722

- 14) J. Linsky, H. Yang, **K. France**, et al. "Observations of Mass Loss from the Transiting Exoplanet HD209458b", 2010, **ApJ**, v717
- 13) **K. France**, J. Linsky, et al. "Metal Depletion and Warm H₂ in the Brown Dwarf 2M1207 Accretion Disk" 2010, **ApJ**, v715
- 12) **K. France**, J. T. Stocke, et al. "Searching for Far-Ultraviolet Auroral/Dayglow Emission from HD209458b" 2010, **ApJ**, v712
- 11) S. R. McCandliss, **K. France**, et al. "Far-UV Sensitivity of the Cosmic Origins Spectrograph" 2010, **ApJL**, v709
- 10) E. B. Burgh, **K. France**, and E. B. Jenkins "Atomic and Molecular Carbon as a Tracer of Translucent Clouds" 2010, **ApJ**, v708
- 9) **K. France**, M. Beasley, et al. "Cosmic Origins Spectrograph Observations of the Chemical Composition of LMC N132D " 2009, **ApJL**, v707
- 8) **K. France**, A. Roberge, R. E. Lupu, S. Redfield, P. D. Feldman "Detection of a Low-Mass H₂ Component to the AU Microscopii Circumstellar Disk" 2007, **ApJ**, v668
- 7) S. R. McCandliss, **K. France**, et al. "Molecular and Atomic Excitation Stratification in the Outflow of the Planetary Nebula M 27" 2007, **ApJ**, v659
- 6) E. B. Burgh, **K. France**, and S. R. McCandliss "Direct Measurement of the Ratio of Carbon Monoxide to Molecular Hydrogen in the Diffuse Interstellar Medium" 2007, **ApJ**, v658
- 5) **K. France**, S. R. McCandliss, and R. E. Lupu "A Cometary Bow Shock and Mid-Infrared Emission Variations Revealed in *Spitzer* Observations of IC 405" 2007, **ApJ**, v656
- 4) R. E. Lupu, **K. France**, and S. R. McCandliss "Discovery of Ly α Pumped Molecular Hydrogen Emission in the Planetary Nebulae NGC 6853 and NGC 3132" 2006, **ApJ**, v644
- 3) **K. France** & S. R. McCandliss "Molecular Hydrogen in Orion as Observed by the *Far Ultraviolet Spectroscopic Explorer*" 2005, **ApJL**, v629

2) **K. France**, B-G Andersson, S. R. McCandliss, P. D. Feldman “Fluorescent Molecular Hydrogen in IC 63: FUSE, HUT, and Rocket Observations” 2005, **ApJ**, v628

1) **K. France**, S. R. McCandliss, E. B. Burgh, P. D. Feldman “Rocket and FUSE Observations of IC 405: Differential Extinction and Fluorescent Molecular Hydrogen” 2004, **ApJ**, v616

Professional References:

Professor James C. Green, University of Colorado at Boulder
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