CURRICULUM VITAE

DAVID C. KOO

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CONTACT INFORMATION

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EDUCATION

1981 Ph. D. in Astronomy	University of California, Berkeley
1974 M. A. in Astronomy	University of California, Berkeley
1972 A. B. in Physics (summa cum laude)	Cornell University, Ithaca

ACADEMIC POSITIONS

2014 - present	Professor/Astronomer Emeritus	UCO Lick Observatory, UC Santa Cruz
1995 – 2014	Professor & Astronomer	UCO Lick Observatory, UC Santa Cruz
1988 - 1995	Assis./Assoc. Professor & Astronomer	UCO Lick Observatory, UC Santa Cruz
1986 - 1987	Assistant Astronomer	Space Telescope Science Inst., Baltimore
1984 - 1986	Postdoctoral Fellow	Space Telescope Science Inst., Baltimore
1981 - 1984	Postdoc. & Senior Research Fellow	DTM, Carnegie Inst. of Washington, DC

AWARDS

1988 NSF Presidential Young Investigator Award.
1996 Japan Society for Promotion of Science Fellowship.
2010 Anglo Australian Observatory Distinguished Visitor

NON-UNIVERSITY COMMITTEES

NSF: Graduate Research Fellowship Prog.; Astronomy & Astrophysics Advisory (AAAC)
National Optical Astro. Obs.: Visiting; KPNO Users; KPNO & CTIO Allocation, ALTAIR
Gemini Obs.: Wide Field Multi-Ob ject Spectrograph Science Working Group - chair
Hubble Space Telescope: Allocation - extragalactic subpanel chair; Users; Hubble Fellowship
Keck Obs.: AO & Data Analysis (chair) WG; NIRSPEC & DEIMOS (chair) Science Adv.
Acad. Sinica Inst. for Ast. & Astroph: External Sci. Advisory; 1st & 2nd Decadal Planning

RESEARCH

Observational cosmology; formation and evolution of distant galaxies and active galactic nuclei; large-scale structure; multi-wavelength faint object photometry and spectroscopy; adaptive optics

PUBLICATIONS

Over 250 papers in top refereed astronomical journals and over 100 papers in non-refereed journals and books – over 22,500 citations with an Hirsch Index (h) of over 85

ACADEMIC ADVISEES

Mentored 36 postdoctoral fellows and matriculated 12 PhDs.

Research Innovations:
Koo has worked on faint surveys in observational cosmology for over 30 years and has pushed the frontiers and pioneered new areas that were not yet well explored. Some examples of topics are below and include the number of relevant publications **[#]**; sample publications are also given along with ADS citation counts noted in (**bold)**. The average number of citations is about 6 in two years to about 20 after 10 years for papers in astronomy, so any over 50 (of which I have over 120) are regarded as "successful" (G. Meylan 04).
Journal Codes: ApJ=Astrophysical Journal AJ=Astronomical J. AA=Astronomy & Astrophysics ARAA=Annual Reviews of Astronomy & Astrophysics Nat=Nature PASP=Pub. of the Astronomical Society of the Pacific

- First multicolor (3 or more filters) photo-z analysis of faint galaxies [16]:
Koo 1981 ApJ (**120**) *Multicolor photometry of the red cluster 0016+16 at Z = 0.54*
Koo 1985 AJ (**159)** *Optical multicolors - A poor person's Z machine for galaxies*
Koo 1986 ApJ (**158)** *Multicolor photometry of field galaxies to B = 24*
Lowenthal, Koo+ 1997 ApJ (**431**) *Keck Spectroscopy of z~3 Galaxies in the HDF*

- First searches for primeval galaxies using CCD grism in the far red [2]:
Koo & Kron 1980 PASP (**50**) *Primeval galaxies - A new look in red light*

- Faintest surveys: IR [12]; redshift [12]; QSO & AGN [22]; radio galaxies [13]
Bershady+ 1998 ApJ (**99**) NIR *Galaxy Counts to J&K ~ 24 as a Fnct of Image Size*
Koo & Kron 1992 ARAA (**231**) *Evidence for evolution in faint field galaxy samples*
Koo+ 1996 ApJ (**76**) *Redshift z~1 Field Galaxies Observed with Keck & HST*
Elbaz+ 1999 AA (**260**) *Source counts from the 15 mu m ISOCAM Deep Surveys*
Windhorst+ 1985 ApJ (**226**) *Sub-mJy 1.4 GHz source counts and multicolor studies of weak radio galaxy populations*
Koo & Kron 1988 ApJ (**163**) *Spectroscopic survey of QSOs to B = 22.5 - The LF*

- First obs of clustering evolution & large scale structures at high redshift [21]:
Koo & Szalay 1984 ApJ (**85**) *Angular correlations of galaxies to B = 24 - Another probe of cosmology and galaxy evolution*
Broadhurst+ 1990 Nat (**595**) *Large-scale distrib. of galaxies at the Galactic poles*

- First studies of internal kinematics for distant galaxies [21]:
Vogt+ 1996 ApJ (**209**) *Optical Rotation Curves of Distant Field Galaxies: Keck*
Vogt+ 1997 ApJ (**177**) *Results at Reshifts to z ~ 1 ; Sub-L* Systems*

- First use of close pair counts to study merger rates and to z > 1 [5];
Zepf & Koo 1989 ApJ (**130**) *Close pairs of galaxies in deep sky surveys*
Lin & Koo+ 2004 ApJ (**180**) *The DEEP2 Galaxy Redshift Survey: Evolution of Close Galaxy Pairs and Major-Merger Rates up to z ~ 1.2*

- First use of Echelle high spectral resolution for distant galaxies [2];

Koo+ 1995 ApJ (**112**) *High-resolution spectra of distant compact narrow emission line galaxies: Progrenitors of spheroidal galaxies*

- First study of large samples of z ~ 1 galaxies for Galactic winds [6]:

Weiner+ 2009 ApJ (**344**) *Ubiquitous Outflows in DEEP2 SF Galaxies at z = 1.4*

Rubin+ 2010 ApJ (**109)** *The Persistence of Cool Galactic Winds in High Stellar Mass Galaxies between z ~ 1.4 and ~1*

- First study of high redshift field galaxy metallicities [4];

Kobulnicky & Koo 2000 ApJ (**71**) *NIR Spectroscopy of Two Galaxies at z=2.3 & 2.9: New Probes of Chemical and Dynamical Evolution at High z*

Kobulnicky+ 2003 ApJ (**109**) *The DEEP GSS VII. Metallicity of Field Galaxies at 0.26 < z < 0.82 & the Evolution of Luminosity-Metallicity Relation*

- First studies of luminous blue compact galaxies at high redshift [16]:

Koo+ 1994 ApJ (**79**) *HST images of very compact blue galaxies at z ~ 0.2*

Guzman, Gallego, Koo+ 1997 ApJ (**230**) *The Nature of Compact Galaxies in the HDF. II. Spectro. Properties and Implications for the Evolution of the SFR Density of the Universe*

- First *quantitative* studies of distant galaxy spatial structures using HST [13]:

Wirth, Koo, & Kron ApJ 1994 (**40**) *HST observations of the distant cluster CL 0016+16: Quantitative morphology of confirmed cluster members*

Simard, Koo+ 1999 ApJ (**157**) The Magnitude-Size Relation of Galaxies out to z~1

- First studies of distant sources using laser guide star adaptive optics [8]:

Melbourne+ 2005 ApJ (**34**) *Merging Galaxies in GOODS-S: First Extragalactic Results from Keck Laser Adaptive Optics*

Melbourne+ 2007 ApJ (**11**) *Rest-Frame R Light Curve of a z~1.3 Supernova Obtained with Keck Laser Adaptive Optics*

Koo initiated or has led or co-led several major observational surveys including LBDS (Leiden Berkeley Deep Survey); Kitt Peak Galaxy Redshift Survey (KPGRS); Team Keck Redshift Survey (TKRS) of GOODS-North; Deep Extragalactic Evolutionary Probe (DEEP); All-wavelength Extended Groth International Survey (AEGIS); & Center for Adaptive Optics Treasury Survey (CATS). He is also a senior leader within Professor G. Fazio's Spitzer Extended Deep Survey (SEDS) that has 2100 hours of Spitzer mid-infrared (IRAC instrument) and Professor S. Faber's Hubble Space Telescope (HST) Multi-Cycle Program (MCT) that has been the largest ever allocation of 902 orbits from its new near-infrared camera (WFC3 instrument) and 902 orbits from its best optical camera (ACS). Just the ground based imaging and spectroscopic support for these programs have required over 150 nights of the Kitt Peak National Observatory (KPNO) 4-meter in the 1970s and 1980s and over 100 Keck 10-meter Telescope nights since the mid-1990's. HST time has totaled over 1000 orbits. Koo also initiated and helped with the development of the world's best multi-object optical spectrograph for large telescopes (DEIMOS- PI: Faber) used for the DEEP2 survey.

Koo has been PI or co-I with funding from about 100 grants from US-National Science Foundation (NSF), HST, Spitzer Telescope, Chandra Space Telescope, and NASA with value totaling over $5M. He was also a senior member of the US Science & Technology Centers: Center of Particle Astrophysics (CfPA) based in Berkeley and Center for Adaptive Optics (CfAO) based at his home institution.

Koo has advised and hosted over 35 postdocs during his career and matriculated 12 PhDs. He has also reviewed and signed off many other PhD theses in the US and overseas.

Current Advisees:

Undergrads: None
Graduate: None
Postdoctoral: Yicheng Guo, Hassen Yesuf

Positions of Former PhD Students (*:12 total) and Postdoctoral Fellows (36)

Mark Ammons*	Postdoctoral Fellow at LLNL, CA
Guillermo Barro	Assistant Professor at University of the Pacific, CA
Mathew Bershady	Tenured Professor at University of Wisconsin
Nicolas Cardiel	Tenured Professor, Univ. of Madrid, Spain
Edmond Cheung*	Postdoctoral Fellow at IPMU
Kiyomi Denda	Researcher at National Astronomical Observatory of Japan
Alberto Dominguez	Postdoctoral Researcher, Clemson Univ., South Carolina
Aaron Dutton	Researcher, New York Univ., Abu Dhabi
David Elbaz	Permanent Staff at CEA Saclay, France
Nancy Ellman*	Research Scientist at Yale University, Astronomy Dept.
Duncan Forbes	Tenured Prof. at Swinburne Univ, Melbourne, Australia
Jesus Gallego	Tenured Professor at Univ. of Madrid, Spain
Karl Gebhardt	Tenured Professor at Univ. of Texas, Austin
Caryl Gronwall*	Senior Research Associate at Penn. State University
Yicheng Guo	Assistant Prof. at Univ. of Missouri
Rafael Guzmán	Tenured Professor at Univ. of Florida, Gainesville
Myungshin Im	Tenured Professor at Seoul University, South Korea
Tesla Jeltema	Tenured Professor at UC Santa Cruz
Susan Kassin	Assistant Astronomer, Space Telescope Sci. Inst., MD
Chip Kobulnicky	Tenured Professor at Univ. of Wyoming
Dale Kocevski	Tenured Professor at Colby College
Nicholas Konidaris*	Staff Researcher at Carnegie Institution, Santa Barbara, CA
Kamson Lai	Data science position with Groupon, San Jose, CA
Elise Laird	Staff position at Imperial College, London, UK
Lihwai Lin*	Permanent Scientist, ASIAA, Taiwan
Jennifer Lotz	Tenured Astronomer at Space Telescope Science Inst., MD
James Lowenthal	Tenured Professor at Smith College, Amherst
Elizabeth McGrath	Tenured Professor at Colby College
Jason Melbourne*	Data Engineer at AirMap, Los Angeles, CA
Anne Metevier *	Staff Astronomer at Sonoma State Univ., CA
Mark Mozena*	Policy Assistant in Washington, D. C.

Kai Noeske	Staff at Haus der Astronomie, Heidelberg, Germany
Kate Rubin *	Assistant Professor at San Diego State University
David Rosario	Postdoctoral Research Fellow at Durham University, UK
Ricardo Schiavon	Reader at Liverpool John Moores Univ., UK
Luc Simard	Staff Astronomer, Astro. Tech. Res. Group, NRC, Canada
Eric Steinbring	Gemini Support Staff at NRC,Canada
Elise Toloba	Assistant Professor at University of the Pacific, CA
Jon Trump	Assistant Professor at University of Connecticutt,
Nicole Vogt	Tenured Professor at New Mexico State Univ.
Benjamin Weiner	Staff Researcher at Univ. of Arizona
Christopher Willmer	Staff Researcher at Univ. of Arizona
Greg Wirth*	Senior Staff Scientist at Nat. Ecological Obs. Network, CO
Hassen Yesuf*	Postdoctoral Fellow at UCSC