

CURRICULUM VITAE

Bruce Alan Macintosh

Present Position: Professor of Physics
Kavli Institute for Particle Astrophysics and Cosmology
Department of Physics
Stanford University
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Stanford, CA 94305
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Principal Investigator, Gemini Planet Imager

Education: Ph.D., Astronomy, 1994
University of California, Los Angeles
Advisors: Prof. Eric Becklin and Prof. Ian McLean

B.Sc., Physics, 1988
Trinity College, University of Toronto, Ontario, Canada

Awards and honors: 2013 LLNL Physics Directorate Award for Outstanding Postdoc Mentoring
2011 Elected Fellow of the SPIE
2010 Newcomb Cleveland Prize from the American Association for
Advancement of Science for best paper published in *Science* between
July 2008-June 2009 for “Direct Imaging of Multiple Planets Orbiting
the Star HR8799”
2010 LLNL Science and Technology award for outstanding research
2009 LLNL Science and Technology Directorate award for excellence in
publication
2004 “Spatially filtered wave-front sensor for high-order adaptive optics”
selected as most significant paper in adaptive optics by OSA

Research Interests:

- Direct detection and spectroscopy of extrasolar planets
- Science-driven optimization of astronomical visible and IR instrumentation
- High contrast imaging systems for ground and space based telescopes
- Extrasolar planet population statistics
- Future large optical telescopes
- Astronomical adaptive optics: design, performance characterization, and observational techniques
- Application of signal processing approaches to astronomy
- Adaptive optics for next-generation x-ray light sources
- Wavefront control for microscopy and biomedical imaging

Community and Committee Service:

Member, Wide-Field IR Survey Telescope Formulation Science Working Group (PI: Coronagraph Science Investigation Team)	2016-2020
Program Committee, “Adaptive optics”, 2016 SPIE	2016
National Academy Committee “Review of Progress Toward the Decadal Survey Vision New Worlds, New Horizons in Astronomy and Astrophysics”	2015-2016
National Academy Committee on Astronomy and Astrophysics	2015-
Scientific Organizing Committee, Steve Kahn 60 th birthday	2014-2015
Program Committee, “Extrasolar Planets”, 2015 SPIE	2014-2015
SLAC Director’s Review, LSST Camera, Panel Member	2014
NASA APRA/SAT Exoplanet Proposal Review Committee	2014
Scientific Organizing Committee, Sagan Exoplanet Summer Workshop	2014
Wide-field IR Survey Telescope Science Definition Team	2013-2015
Convener, Thirty Meter Telescope Exoplanet International Science Development Team	2013-2015
Program Committee, “Adaptive Optics Systems and Applications”, 2012 SPIE Astronomical Instrumentation	2012Hi
LSST Camera Systems Integration Conceptual Design Review	2011
Program Committee, “Techniques for detection of exoplanets” 2011 SPIE Optics and Photonics	2011
NASA Exoplanet Analysis Group Executive Committee	2010-2012
National Research Council ASTRO2010 Decadal Survey: Program Prioritization Panel on Ground Based Optical/IR	2009-2010
Thirty Meter Telescope IRIS Science Team	2008-present
Program Committee, “Adaptive Optics Systems and Applications” 2008 SPIE Astronomical Instrumentation	2008
Astronomy and Astrophysics Advisory Committee Exoplanet Task Force (ExoPTF)	2007-2008
NASA APRA Review Panel (X-ray)	2007-2008
ESO Very Large Telescope SPHERE planet finder PDR and CDR	2007, 2008
Scientific Organizing Committee, Spirit of Lyot conference	2007
Giant Segmented Mirror Telescope Science Working Group	2007-2008
Keck Next Generation AO System Science Team	2006-present
Gemini Adaptive Optics Working Group	2006-2009
TMT Narrow-field IR AO System Conceptual Design Review	2006
Laboratory Directed Research and Development selection committee, LLNL	2005-2007
Keck Observatory Next-Generation Wavefront Controller CDR (chair)	2005
Terrestrial Planet Finder instrument conceptual design selection	2005
NSF AO Development Plan Steering Committee	2004
JPL Terrestrial Planet Finder Technology Advisory Committee	2004-2006
Keck Observatory Adaptive Optics Working Group	2002-Present
University of California Observatories IR working group	1995-2002
NSF Major Research Instrumentation Astronomy Review Panel	2003
NASA Gossamer Spacecraft Program Review Panel	2001
LLNL IGPP Director Search Committee	2001
Referee for Ap.J., Ap.J. Letters, A&A, PASP, Optics Express, JOSA A, and	

Applied Optics

Memberships:

American Astronomical Society
AAS Division of Planetary Sciences
SPIE (Fellow)

Research grants held as principal investigator:

NASA Exoplanet Research Program, “The Gemini Planet Imager Exoplanet Survey: Completion and Analysis”, \$777,721	2017-2019
WFIRST Science Investigation Team, “Optimizing WFIRST Coronagraphic Science”, \$2,869,750	2016-2020
NASA NEXSS Program, “Exoplanets Unveiled: Formation, Evolution and Prospects for Life”, \$600K	2015-2018
NSF Astronomy&Astrophysics Grant, “Collaborative Research: The Gemini Planet Imager Exoplanet Survey”, \$830K	2014-2018
NASA Origins of Solar Systems, “The Gemini Planet Imager Exoplanet Survey”, \$669K	2014-2016
AURA contract, “GPI Verification and Commissioning” \$105K	2014
Herschel OT1 funding, “Testing Planetary Dynamics Evolutionary History in the HR 8799 Planet/Disc System”, \$18K	2011
LLNL Laboratory Directed Research and Development, “Images and spectra of extrasolar planets with advanced adaptive optics”, \$1.62M	2010-2012
NASA Origins of Solar Systems, “Spectroscopic characterization of the HR8799 Planetary System”, \$420K	2010-2012
Gemini Planet Imager Design & Construction, \$24M	2006-2011
LLNL Laboratory Directed Research and Development, “Tracing The Shadows of Planetary Systems”, \$1.8M	2008-2010
HST funding, “Probing the compact disk of a nearby T Tauri star”, \$57K	2007-2009
Thirty Meter Telescope, “Feasibility study for planet formation Imager”, \$300K	2006
LLNL Laboratory Directed Research and Development, “Probing Other Solar Systems with Current&Future AO”, \$1.5M	2005-2007
Gemini/AURA, “Conceptual design of an Extreme Adaptive Optics Coronagraph”, \$200K (Gemini) plus institutional support	2004-2005
NSF Center for Adaptive Optics, “Extreme Adaptive Optics: Studying the formation and properties of extrasolar planets with the world’s most powerful AO system”, \$1.7M	2003-2010
LLNL Laboratory Directed Research and Development, “Direct Detection of Warm Extrasolar Planets”, \$600K	2002-2004
NSF Center for Adaptive Optics, “High Dynamic Range Imaging and Spectroscopy of Young Stellar Objects”, \$68K	2002
NSF Center for Adaptive Optics, “Evaluation and Improvement of Performance of AO Systems”, \$157K	2002

NSF Center for Adaptive Optics, "Primitive Planetary Systems", \$160K	2000-2001
LLNL Laboratory Directed Research and Development, "Primitive Planetary Systems via the Keck Telescope", \$630K	1999-2001

Students and postdoctoral scholars supervised

Undergraduate research interns supervised:

Megan Eckart	1996-1999
Dane Kent	1998
Quinn Konopacky	2001-2003
Joshua Isaacs	2009
Naru Sadakuni	2012-2013
Kyana van Houten	2014
Loren Amdahl-Culleton	2014
Ashley Chontos	2015
Ben Lane	2015
Chistina Vides	2017

Graduate students:

Jean-Baptiste Ruffio, Stanford	2014-
Kathleen Morzinski, UC Santa Cruz	2005-2011
Lisa Poyneer, UC Davis / LLNL	2005-2007
Julia Evans, UC Davis / LLNL	2002-2006
Co-supervised thesis of Denise Kaisler Ph.D. student at UCLA	2000-2005
Involved in Ph.D. thesis research for Henry Roe and James Lloyd at UC Berkeley	1997-2002

Postdoctoral scholars:

Seran Gibbard	1996-1999
Jennifer Patience	2000-2003
Marcos van Dam	2002-2004
Christian Marois	2005-2008
Michael Fitzgerald	2008-2010
Quinn Konopacky	2009-2012
Mark Ammons	2010-2013
Dmitry Savransky	2011-2013
Patrick Ingraham	2013-2014
Eric Nielsen	2014-present
Katherine Follette	2015-2016
Andrew Norton	2015-present
Vanessa Bailey	2015-2017
Ian Czekala	2016-present
Jeffrey Chilcote	2017-2018

Past positions:

Physicist Applied Physics Section, Physics Division Lawrence Livermore National Laboratory	2001-2014
Associate Director for High-Contrast AO National Science Foundation Center for Adaptive Optics	1998-2001

Physicist Institute of Geophysics and Planetary Physics Lawrence Livermore National Laboratory	1997-2001
Postdoctoral Researcher Institute of Geophysics and Planetary Physics Lawrence Livermore National Laboratory	1994-1997
Research Assistant Department of Astronomy University of California, Los Angeles	1991-1994
Summer Researcher Rockwell International Science Center Thousand Oaks, California	1991
Teaching Assistant Department of Astronomy University of California, Los Angeles	1988-1991
Summer Research Assistant Canadian Institute for Theoretical Astrophysics University of Toronto, Ontario, Canada	1989
Summer Research Assistant Department of Mathematics Royal Military College, Kingston, Ontario, Canada	1988
Summer Research Assistant Department of Physics and Astronomy Queen's University, Kingston, Ontario	1985-1987