# Rene A. Ong

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## **Education:**

1987 Ph.D. Physics Stanford University

Ph.D. Thesis: Measurement of the B Hadron Lifetime

Advisor: John A. Jaros

1983 M.S. Physics Stanford University

Advisor: Martin L. Perl

1981 B.S. Physics University of Michigan

Undergraduate Thesis:

Design of a Low Energy Electron Neutrino Beam

Advisor: Lawrence R. Sulak

## **Employment / Positions:**

2020-	Distinguished Professor	Department of Physics and Astronomy University of California, Los Angeles
2023-2024	Visiting Scientist	INFN-Trieste Trieste, Italy
2001-2020	Professor	Department of Physics and Astronomy University of California, Los Angeles
2016	Visiting Professor	Institute for Cosmic Ray Research (ICRR) University of Tokyo, Kashiwa, Japan
2015	Visiting Scientist	INAF-Milano Milano, Italy
	Visiting Scientist	INFN-Padova, INFN- Bari Padova and Bari, Italy
2011	Directeur de Recherche 1	Laboratoire Leprince Ringuet (LLR) Ecole Polytechnique, Palaiseau, France
2010-2011	Ernest Kempton Adams Research Fellow	Department of Physics Columbia University

2005	Visiting Scholar	Department of Physics University of Michigan
1998-2001	Associate Professor	Department of Physics & Enrico Fermi Institute University of Chicago
1991-1998	W.W. Grainger Assistant Professor	Department of Physics & Enrico Fermi Institute University of Chicago
1988-1991	Robert R. McCormick Fellow	Enrico Fermi Institute University of Chicago
1987-1988	Postdoctoral Research Associate	Research Division Stanford Linear Accelerator Center
1980-1981	Research Assistant	Department of Physics University of Michigan
1980	Research Assistant	Physics Department Brookhaven National Laboratory
1979	Research Assistant	Space Physics Research Laboratory University of Michigan

## **Honors and Awards**

- Ronald and Jeryl Abelmann Award for Undergraduate Teaching Excellence; Teacher of the Year, Dept. of Physics and Astronomy, UCLA, 2020-21
- Outstanding Teaching Award, Dept. of Physics and Astronomy, UCLA, 2017-2018
- DESY Silberne Ehrennadel, Deutsches Elektronen-Synchrotron, Hamburg, Germany, 2017
- Outstanding Teaching Award, Dept. of Physics and Astronomy, UCLA, 2016-2017 (2)
- Ernest Kempton Adams Research Fellow, Columbia University, 2010-11
- Outstanding Referee, American Physical Society, 2010
- Outstanding Teaching Award, Dept. of Physics and Astronomy, UCLA, 2007-2008
- Fellow, American Physical Society, 2003
- Outstanding Teaching Award, Dept. of Physics and Astronomy, UCLA, 2001-2002
- A.P. Sloan Foundation Fellow, 1992
- Robert R. McCormick Fellow, Enrico Fermi Institute, 1988
- James B. Angell Scholar, University of Michigan, 1981
- B.S. in Physics with Highest Distinction, University of Michigan, 1981
- Phi Beta Kappa, 1980
- William J. Branstrom Prize, University of Michigan, 1978
- Rackham Undergraduate Fellowship, University of Michigan, 1977-1981

# **Scientific Collaboration Leadership:**

2014-2024	Co-Spokesperson, Cherenkov Telescope Array (CTA) Consortium
2014	Deputy Chair, CTA-US Steering Committee
2009-2013	Spokesperson, VERITAS Collaboration
2007-2009	Deputy Spokesperson, VERITAS Collaboration
2005-2007	Chair, VERITAS Executive Committee
1997-2007	PI, Solar Tower Atmospheric Cherenkov Effect Experiment (STACEE)

# **Research Grants:**

## **Principal Investigator:**

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2022-2027	NASA, 80NSSC21K1877, The GAPS Experiment: As Search for Dark Matter Using Low Energy Antiparticles \$1,559,174
2021-2026	DOE, A22-1532-S007. HEP Consortium for Advanced Training (UCLA lead) \$201,925
2023-2026	NSF/SAO, SV1-41002, WoU-MMA: Operation of VERITAS in the Epoch 2022-2025 \$43,464
2017-2022	NASA, NNX17AB45G, The GAPS Experiment: A Search for Dark Matter Using Low Energy Antiprotons and Antideuterons (UCLA) \$2,276,889
2020-2023	NSF/SAO, SV0-09009, <i>Operations of VERITAS in the Epoch 2019 to 2022</i> \$75,616
2019-2020	NSF/SAO, SV8-88014:2, Equipment and Fabrication of the VERITAS Data Archive/Library (supplement) \$31,023
2016-2020	NSF, PHY-1607491, Particle Astrophysics with VERITAS and Development for CTA \$1,427,925
2017-2019	NSF/SAO, SV8-88014, Equipment and Fabrication of the VERITAS Data Archive/Library \$43,280
2015-2016	NSF, PHY-1519145, Particle Astrophysics with VERITAS and Defining Scientific Horizons for CTA \$19,782
2013-2016	NSF, PHY-1307171, Particle Astrophysics with VERITAS and Defining Scientific Horizons for CTA \$1,444,782
2013-2015	NSF/SAO, SV4-82013, Support for the Operation of VERITAS \$55,093
2012-2016	NSF/SAO, SV2-82002:2, Operation of VERITAS (supplement) \$77, 434

2012-2013	NASA, NNX12AD49G, An Indirect Search for Dark Matter Using Antideuterons: The GAPS Experiment (UCLA) \$50,000
2011-2012	NSF/SAO, SV2-82002, Operation of VERITAS \$41,500
2010-2013	NSF, PHY-0969948, Particle Astrophysics with VERITAS \$1,426,211
2010-2011	NSF/SAO, SV8-1011, Operation of VERITAS in the period of 12/01/10 to 09/30/11 \$47,266
2009-2012	NASA, NNX09AC13G, An Indirect Search for Dark Matter Using Antideuterons: The GAPS Experiment (UCLA) \$966,055
2007-2010	NSF, PHY-0653622, Particle Astrophysics with VERITAS \$1,245,525
2007-2009	NSF/SAO, SV7-77008, Operation of VERITAS in the Epoch 2006-2009 \$103,533
2007-2008	NSF, PHY-0735031, Particle Astrophysics with VERITAS \$32,913
2006-2009	NSF, PHY-0601203, High-energy Gamma-ray Astrophysics with STACEE \$287,850
2004-2007	NSF, PHY-0354941, Particle Astrophysics with VERITAS \$916,609
2003-2007	NSF/SAO, SV74005, VERITAS Phase I: A Cherenkov Telescope for Gamma-Ray Astrophysics \$271,216
2003-2006	NSF, PHY-0244928, STACEE: Gamma-Ray Astrophysics Between 50 and 1000 GeV \$1,095,468
2002-2005	NSF, PHY-0296052, <i>High Energy Gamma-Ray Astrophysics with STACEE</i> \$863,861
2002-2003	NSF, PHY-0218581, High Energy Gamma-Ray Astrophysics with STACEE \$135,002
2000-2002	NSF, PHY-MRI-0079793, Development and Acquisition of Electronic Instrumentation for the VERITAS Consortium Array of High Energy Gamma-Ray Telescopes \$550,204
2003-2004	NSF/SAO, SV3-73011, VERITAS Phase I: A Cherenkov Telescope for Gamma-Ray Astrophysics \$15,239
2000-2002	NSF, PHY-0070953, High Energy Gamma-Ray Astrophysics with STACEE \$776,195

1997-2000 NSF, PHY-9722655, STACEE: A Low Threshold Atmospheric Cherenkov Experiment for Gamma Ray Astrophysics \$952,893

## Co-PI/Co-Investigator:

2022-2026	NSF, PHY-2209605, WoU-MMA: High-Energy Astrophysics with VERITAS and Towards Realization of CTA \$1,249,826
2019-2022	NSF, PHY-1913798, Particle Astrophysics with VERITAS and pSCT Pathfinder towards CTA \$1,208,516
2017-2022	NASA, 15-APRA15-0083, The GAPS Experiment: A Search for Dark Matter Using Low Energy Antiprotons and Antideuterons \$7,841,000
2012-2019	NSF, PHY-MRI-1229792, MRI Consortium: Development of a Novel Telescope for Very High-Energy Gamma-Ray Astrophysics \$2,548,939
2013-2014	NASA, FERMI12-0044, A Multi-Wavelength Study of Gamma-Ray Production in Cygnus X-3 \$86,488
2011-2012	FERMI10-C4-0023, Gamma-ray Production in Cygnus X-3: A Multiwavelength Perspective \$76,244
2010-2014	NASA, APRA10-050, An Indirect Search for Dark Matter Using Antideuterons: The GAPS Experiment \$3,563,319
2010-2013	NSF, PHY-MRI-0990242, MRI-R2 Consortium: Development of Improved Instrumentation for the VERITAS Gamma-Ray Observatory \$1,633,490
2009-2010	NASA, FERMI08-0061, Correlated Analysis of VERITAS and FERMI Data in the Cygnus Region of the Galactic Plane \$80,000
1997-1999	NSF, PHY-9724176, BLANCA: Broad Lateral Non-Imaging Cherenkov Array \$49,049
1996-2000	NSF, PHY-MRI-9512191, Hardware Procurement and Software Development for a Multi- Institutional Mass Storage System \$1,642,649
1994-1997	NSF, PHY-9322583, Chicago Air Shower Array \$1,605,960

### **Professional Activities**

Reviewer (Journals):

Nature, Science, Physical Review Letters, Physics Letters, Physical Review D, Astrophysical Journal, Astronomy and Astrophysics, Astroparticle Physics, Nuclear Instruments and Methods, Particle Data Group

Reviewer (Agencies):

National Science Foundation (PHY, AST, OPP, INT)

Department of Energy (Office of Science)

NASA

Research Corporation

**Cottrell Foundation** 

**Guggenheim Foundation** 

U.S.-Israel Binational Science Foundation

Helmholtz Association (Germany)

Deutsche Forschungsgemeinschaft (Germany)

CNRS (France)

National Research Foundation (South Africa)

Tata Institute of Fundamental Research (India)

Swiss National Science Foundation (SNSF)

Institute for Cosmic Ray Research (ICRR), Japan

Member: American Physical Society, American Astronomical Society

## Professional Service (since 2000)

#### **National Strategic/Roadmap Committees:**

2012-16	Committee on Astronomy and Astrophysics (CAA), Board on Physics and Astronomy, National Research Council, Washington D.C., USA.
2011	Committee to Assess the Deep Underground Science and Engineering Laboratory (DUSEL), National Research Council, Washington DC.
2010-12	Scientific Advisory Committee (SAC), AStroParticle ERAnet (ASPERA), The Roadmap for Astroparticle Physics in Europe, Hamburg, Germany.
2009-10	Panel on Particle Astrophysics and Gravitation (PAG), New Worlds, New Horizons in Astronomy and Astrophysics, Astro2010: The Decadal Survey in Astronomy and Astrophysics, National Research Council, Washington D.C., USA.
2009	Particle Astrophysics Scientific Assessment Group (PASAG), Sub-Panel of the High Energy Physics Advisory Panel (HEPAP), Washington D.C., USA.
2005	NASA Universe Exploration Strategic Roadmap Committee (SRC-8), NASA, Washington D.C.

2004	<u>Chair</u> , Science Assessment Group for Experiments in Non-Accelerator Physics (SAGENAP), Sub-Panel of the High Energy Physics Advisory Panel (HEPAP), Washington D.C, USA.
2003	Reviewer, Connecting Quarks with the Cosmos, Eleven Science Questions for the New Century, Committee on the Physics of the Universe, National Research Council, Washington D.C, USA.
2003-07	Astronomy and Astrophysics Advisory Committee (AAAC), NSF, NASA, and DOE, Washington D.C, USA.
2003	High Energy Physics Facilities Committee, Sub-Panel of the High Energy Physics Advisory Panel (HEPAP), Washington D.C., USA.
2002-04	High Energy Physics Advisory Panel (HEPAP), DOE and NSF, Washington D.C., USA.
2002	Neutrino Facilities Assessment Committee (NFAC), Neutrinos and Beyond, National Research Council, Washington D.C., USA.
2001	Long Range Planning for High Energy Physics, Sub-Panel of the High Energy Physics Advisory Panel (HEPAP), DOE and NSF, Washington D.C., USA
2000-02	Scientific Assessment Group for Experiments in Non-Accelerator Physics (SAGENAP), DOE and NSF, Washington D.C., USA.
2000	Panel on High Energy Astrophysics from Space (HEAS), Astronomy and Astrophysics in the New Millennium, Decadal Survey in Astronomy and Astrophysics, National Research Council, Washington D.C., USA.
2000	Panel on Particle, Nuclear, and Gravitational Wave Astrophysics (PNGWA), Astronomy and Astrophysics in the New Millennium, Decadal Survey in Astronomy and Astrophysics, National Research Council, Washington D.C., USA.

# Laboratory/Institute/Project Committees:

2024 -	IceCube Scientific Advisory Committee, Madison WI, USA.
2024 -	External Review Committee, Institute for Space-Earth Environmental (ISEE) Research, Nagoya University, Nagoya, Japan.
2019	External Review Committee, Institute for Cosmic Ray Research (ICRR), University of Tokyo, Kashiwa, Japan.
2012-17	<u>Physics Research Committee (PRC)</u> , Deutsches Elektronen-Synchrotron (DESY) Hamburg, Germany.
2011	Review Committee, Helmholtz Alliance for Astroparticle Physics – HAP, Helmholtz Association, May 2011, Karlsruhe, Germany.

2011	Committee of Visitors (COV), NSF Astronomy (AST) Division, Washington DC.
2009	<u>Five-Year Program Review</u> , <i>Program Astroparticle Physics, Research Field Structure of Matter,</i> Helmholtz Association, Karlsruhe, Germany.
2008	Selection Committee, GLAST Fellowship (Cycle 1) Program, NASA, Washington D.C.
2005-08	Conseil Scientifique, Laboratoire Leprince Ringuet, Ecole Polytechnique, Palaiseau, France.
2005	Nominating Committee, Division of Astrophysics (DAS) of the American Physical Society (APS), Washington DC.
2003-04	<u>Director's Review</u> , Physics Division, Lawrence Berkeley National Laboratory (LBNL), Berkeley CA, USA.
2003-07	Gamma Ray Large Area Space Telescope (GLAST) User's Committee, NASA, Washington D.C, USA.
2003-07	<u>Experimental Program Advisory Committee (EPAC)</u> , Stanford Linear Accelerator Center (SLAC), Stanford CA, USA.
2002-04	<u>Universities Research Association (URA) Visiting Committee,</u> Fermi National Accelerator Laboratory (FNAL), Batavia IL. USA,
2000	Committee of Visitors (COV), NSF Physics (PHY) Division, Washington D.C., USA.
2000	Portfolio Allocation Review (PAR), NSF Astronomy (AST) Division, Washington D.C., USA.

# **Conference Organization:**

2024	Scientific Organizing Committee, <i>The 2<sup>nd</sup> LHAASO Symposium</i> , March 2025, Hong Kong, China.
2023	<u>Scientific Organizing Committee</u> , <i>The 1<sup>st</sup> LHAASO Symposium</i> , May 2023, Tianfu Cosmic Ray Research Center, Chengdu, China.
2019	Organizer, Antideuteron 2019, March 2019, Los Angeles CA, USA.
2019	International Advisory Committee, International School on Astroparticle Physics (ISAPP) 2019, at the Pierre Auger Observatory, March 2019, Malargue, Argentina.
2016	International Organizing Committee, Science with the New Generation of High Energy Gamma-ray Experiments (SciNeGHE), October 2016, Pisa, Italy.

2016	Scientific Organizing Committee, Cherenkov Telescope Array: the Ground-based Eyes to Observe the Gamma-ray Universe, COSPAR Event E1.20, August 2016, Istanbul, Turkey.
2016	International Advisory Committee, Cosmic Ray International Seminar (CRIS 2016), New eyes on the Universe, July 2016, Ischia, Italy.
2014	Organizer, Antideuteron 2014: 1 <sup>st</sup> Cosmic Ray Antideuteron Workshop, June 2014, Los Angeles CA, USA.
2013	Session Organizer, High Energy Cosmic Rays and their Propagation, TeV Particle Astrophysics (TeVPA 2013), August 2013, Irvine CA, USA.
2012	Scientific Organizing Committee, Second Cherenkov Telescope Array LINK Meeting, November 2012, Buenos Aires, Argentina.
2012	Scientific Organizing Committee, Gamma 2012, 5th Heidelberg International Symposium on High-Energy Gamma-ray Astronomy, July 2012, Heidelberg, Germany.
2012	International Advisory Committee, 9 <sup>th</sup> Workshop on Science with the New Generation of High Energy Gamma-ray Experiments (SciNeGHE 2012), June 2012, Lecce, Italy.
2006	International Organizing Committee, VI Rencontres du Vietnam: Particle Astrophysics, Hanoi, Vietnam, August 2006.
2005	Organizing Committee, Towards a Future Ground Based Gamma Ray Observatory, October 2005, Malibu CA, USA.
2005	International Advisory Committee, Towards a Network of Atmospheric Cherenkov Detectors VII, April 2004, Palaiseau, France.
2004	Organizing Committee, 2004 Meeting of the Division of Particles and Fields (DPF) of the American Physical Society (APS), August 2004, Riverside CA, USA.
2003	Session Organizer, April Meeting of the American Physical Society (APS), Joint DAP/DPF Session, April 2003, Philadelphia PA, USA.
2002	Scientific Advisory Committee, International Symposium: The Universe Viewed in Gamma Rays, September 2002, Kashiwa, Japan.
2002	<u>Program Committee</u> , SPIE International Symposium on Astronomical Telescopes and Instrumentation, August 2002, Waikoloa HI, USA.
2001	Organizing Committee, Snowmass 2001, The Future of Particle Physics, July 2001, Snowmass CO, USA.
2000-02	High Energy Neutrino Astrophysics Panel (HENAP), Particle and Nuclear Astrophysics and Gravitation Interaction Committee (PANAGIC).

### **Postdoctoral Research Associates:**

(Most recent position given in parentheses)

2023- 2018-21 2015-19	Yu (Carl) Chen, UCLA Sean Quinn (Software Engineer, Meta Corp) Ralph Bird (Staff Machine Learning Engineer, PagerDuty)
2012-15	Taylor Aune (Data Scientist, Climate Corporation)
2009-12	Pratik Majumdar (Associate Professor, SAHA Institute of Nuclear Physics)
2009-15	Isaac Mognet, (Research Scientist, Penn State University)
2005-10	Amanda Weinstein (Associate Professor, Iowa State University)
2002-06	Jeffrey Zweerink, (Associate Project Scientist, UCLA)
2000-02	Jim Hinton (Director, Max-Planck Institute fur Kernphysik, Heidelberg)
1997-99	Zoa Conner (Instructor, College of Southern Maryland)
1995-98	Mark Chantell (Teaching Staff, University of Chicago)
1994-97	Lucy Fortson (Professor, University of Minnesota)
1992-97	Brian Fick (Professor, Michigan Technical University)
1992-06	Kevin Green (Physics Instructor, University of Connecticut-Stamford).
1991-03	Corbin Covault (Professor, Case Western Reserve University)

### **Graduate Students (Ph.D. supervisor):**

(Most recent position given in parentheses)

Padrick Beggs Ph.D. Student, UCLA Physics

Wenmeng (Nancy)

Ning

Ph.D. Student, UCLA Astronomy

Sydney Feldman Ph.D. Student, UCLA Physics

James Ryan Ph.D. Astronomy 2022

"Dark Matter Searches With Gamma Rays from the Galactic Center Halo

and Cosmic-Ray Antimatter,"

(Postdoc, SLAC National Laboratory)

Matt Buchovecky Ph.D. Physics UCLA 2019

"Very High-Energy Gamma-Ray Emission from the Galactic Center with

**VERITAS**"

(Machine Learning Engineer, ZipRecruiter)

Alexis Popkow Ph.D. Physics UCLA 2016

"Very High-Energy Astrophysical Processes in the Cygnus Region of the

Milky Way"

(Senior Systems Engineer, Echodyne)

Ken Chow Ph.D. Physics UCLA 2010

"A Deep Survey of the Galactic Plane at Very High Energies,"

(private industry).

Ozlem Celik-Tinmaz Ph.D. Physics UCLA 2008

"Observations of the Crab Nebula and Pulsar with VERITAS,"

(Analytics Principal Director, Accenture)

Alex Jarvis Ph.D. Physics UCLA 2008

"Observations of Gamma-Ray Bursts by STACEE,"

(Lead Data Analyst, Glu Mobile)

Jennifer Carson Ph.D. Astronomy, UCLA, 2005

"STACEE Observations of Markarian 421 above 100 GeV and a New

Method for High-Energy Spectral Analysis." (Professor of Physics, Santa Monica College)

Scott Oser Ph.D. Physics, Univ. of Chicago, 1999

"High Energy Gamma-Ray Observations of the Crab Nebula and Pulsar

with the Solar Tower Atmospheric Cherenkov Effect Experiment."

(Professor of Physics, University of British Columbia)

Joseph Fowler Ph.D. Physics, Univ. of Chicago, 1998

"Composition and Spectrum of Cosmic Rays at the Knee Measured by

the CASA-BLANCA Experiment."

(Senior ARRA Fellow, NIST, University of Colorado)

### <u>Undergraduate Students (research supervisor):</u>

(Most recent position given in parentheses)

Gregory Baldwin UCLA undergraduate

Katherine Callahan UCLA, B.S. Physics 2025

(Graduate Student, UCI)

Ryan Morokutti UCLA, B.S. Physics 2025

(Graduate Student, UCB)

Anna Kinderman UCLA, B.S. Physics 2024

(Graduate Student, UCSC)

John Dickson UCLA, B.S. Physics 2023

(Graduate Student, University of Texas)

Alina Kochocki UCLA, B.S. Physics 2021

(Graduate Student, Michigan State University)

Takeru Hayashi UCLA, B.S. Astrophysics 2018

(Research & Development Engineer II, UCLA)

Richie Nagi UCLA, B.S. Physics 2015

(Software Developer, Lawrence Livermore National Laboratory)

Shuoguang Liu UCLA CSST summer program 2014

(Graduate student, University of Chicago)

William Johnson UCLA, B.S. Physics 2013

(Science teacher, Futures Academy)

Sabrina Hong UCLA, B.S. Astrophysics 2013

(Senior Quantum Hardware Engineer, Google)

Brandon Maupin UCLA, B.S. Physics 2013

(Technology & Engineering Education, Council Rock School District)

Erika Zetterlund UCLA REU summer program 2012)

(PhD 2018 from University of Colorado)

Jacob Schwartz UCLA, B.S. Physics 2012

(Staff Research Physicist, Princeton Plasma Physics Laboratory)

Eylene Pirez UCLA, B.S. Physics 2011

(Head of Digital Media and Research, Geodesic Pictures LLC)

Laura Marchand UCLA, B.S. Physics 2010

(Principal, ME Engineers)

Nickolas McColl UCLA, B.S. Physics 2009

(Software Engineer, Google)

Daniel Margala UCLA, B.S. Physics 2009

(Research Software Engineer, National Energy Research Scientific

**Computing Center)** 

Jennifer Sierchio UCLA REU summer program 2008

(Technical Group Lead, BAE Systems Fast Labs)

Jennifer Helsby UCLA REU summer program 2007

(Principal Research Engineer, Freedom of the Press Foundation)

Cyrus Rustomji UCLA, B.S. Physics 2007

(Chief Executive Officer, South 8 Technologies)

William Gignac Internship at UCLA, 2006

(Postdoctoral Fellow, Georgia Institute of Technology)

Jeff Dunworth UCLA, B.S. Physics 2005

(Postdoctoral Assistant Professor, University of Michigan)

Kathryn Grimm UCLA, B.S. Physics 2004

(Assistant Professor, Cal State University East Bay)

Jason Minamora UCLA, B.S. Physics 2003

(no known recent position)

Susan Channels UCLA, B.S. Physics 2002

(no known recent position)

Nicolas Rassat Visiting graduate student from France 2002

(no known recent position)

Thomas Fishman University of Chicago, B.A. Physics 2002

(Platform Strategist, Global Creative Strategy)

Eugene Chae University of Chicago, B.A. Physics 2002

(Principal Data Scientist, Kognitiv Corporation)

Daniel Schuette University of Chicago, B.A. Physics 2000

UCLA research assistant 2001

(Technical staff, MIT Lincoln Laboratories)

Thomas Brennan University of Chicago, B.A. Physics 1999

(Assistant Professor, Ferris State University)

Antonino Miceli University of Chicago, B.A. Physics 1998

(Group Leader, Argonne National Laboratory)

Matthew Pritchard University of Chicago, B.A. Physics 1997

(Professor, Cornell University)

Hugh Kim University of Chicago, B.A. Physics 1996

(Principal/Owner, Greyson Capital Management)

Zandra Kelley University of Chicago, B.A. Physics 1995

(M.D. Family Medicine, Lawrence General Hospital)

Peter Rauske University of Chicago, B.A. Physics 1994

(Research Analyst, TradeLink)

Sunil Golwala University of Chicago, B.A. Physics 1993

(Professor, California Institute of Technology)

Peter Burke University of Chicago, B.A. Physics 1992

(Professor, University of California, Irvine)

#### **External Reviewer for Ph.D. or Habilitation Theses**

Joaquim Palacio Philosophiae Doctor (Ph.D.) 2018

Indirect Dark Matter Searches on the Triangulum-II Dwarf Spheroidal Galaxy and the Perseus Galaxy Cluster with the MAGIC Telescopes Institut de Fisica d'Altes Energies (IFAE) and Universitat Autonoma de

Barcelona (UAB), Barcelona, Spain President of Examining Committee

Riccardo Munini Tesi Dottorato (Ph.D.), 2016

Solar Modulation of Cosmic Ray Electrons and Positrons Measured by

the PAMELA Experiment during the 23rd Solar Minimum Facolta di Scienze Matematiche, Fisiche e Naturali

University of Trieste, Trieste, Italy

Pierre Brun Habilitation a Diriger les Recherches (H.D.R.), 2014

The High-Energy Universe as a Laboratory for Particle Physics

Universite Paris VII, Paris, France

Berrie Giebels Habilitation a Diriger les Recherches (H.D.R), 2011

A Contribution to Gamma-ray Astronomy of GeV-TeV Active Galaxies

with Fermi and H.E.S.S.

Universite Paris Sud 11, Orsay, France

Mathieu de Naurois These de Doctorat (Ph.D.), 2000

L'Experience Celeste: Ouverture d'une Nouvelle Fenetre d'Observation

entre 20 GeV et 300 GeV

Universite Paris VI, Paris, France

Berrie Giebels These de Doctorat (Ph.D.), 1998

Contribution a la Reconversion d'une Centrale Solaire en un Vaste

Detecteur pour l'Astronomie Gamma

Universite de Bordeaux 1, Bordeaux, France

## Rene A. Ong

### **Refereed Publications:**

- 296. "Galactic transient sources with the Cherenkov Telescope Array Observatory," K. Abe *et al.*, MNRAS **540**, 205 (2025).
- 295. "Multiwavelength Observation of a Candidate Pulsar Halo LHAASO J0621+3755 and the First X-ray Detection of PSR J0622+3749," C. B. Adams *et al.*, Astrophys. J. **985**, 90 (2025).
- 294. "Constraints on the X-ray and Very-high-energy Gamma-ray Flux from Supernova Remnant W44," A. Archer *et al.*, Astrophys. J. **983**, 73 (2025).
- 293. "VERITAS and Multiwavelength Observations of the Blazar B3 2247+381 in Response to an IceCube Neutrino Alert," A. Acharyya *et al*, Astrophys. J. **982**, 80 (2025).
- 292. "An In-depth Study of Gamma Rays from the Starburst Galaxy M82 with VERITAS," A. Acharyya *et al.*, Astrophys. J. **981**, 189 (2025).
- 291. "Broadband multi-wavelength properties of M87 during the 2018 EHT campaign including a very high energy flaring episode," J.C. Algaba *et al.*, Astron. and Astrophys. **692**, 140 (2024).
- 290. "Prospects for a survey of the Galactic plane with the Cherenkov Telescope Array," S. Abe *et al.*, JCAP **10**, 081 (2024).
- 289. "Prospects for  $\gamma$ -ray observations of the Perseus galaxy cluster with the Cherenkov Telescope Array," K. Abe *et. al.*, JCAP **10**, 004 (2024).
- 288. "Multiwavelength Investigation of γ-ray Source MGRO J1908+06 Emission using Fermi-LAT, VERITAS and HAWC," A. Acharyya *et al.*, Astrophys. J. **974**, 61 (2024).
- 287. "A Multiwavelength Study to Decipher the 2017 Flare of the Blazar OJ 297," A. Acharyya *et al.*, Astrophys. J. **973**, 134 (2024).
- 286. "Indirect search for dark matter with a combined analysis of dwarf spheroidal galaxies from VERITAS," A. Acharyya *et al.*, Phys. Rev. **D110**, 063034 (2024).
- 285. "Dark matter line searches with the Cherenkov Telescope Array," S. Abe *et al.*, JCAP **07**, 047 (2024).
- 284. "An Angular Diameter Measurement of β UMa via Stellar Intensity Interferometry with the VERITAS Observatory," A. Acharyya *et al.*, Astrophys. J. **966**, 28 (2024).
- 283. "A Multiwavelength Investigation of PSR J2229+6114 and its Pulsar Wind Nebula in the Radio, X-ray, and Gamma-ray Bands," I. Pope *et al.*, Astrophys. J. **960**, 75 (2024).

- 282. "Multiwavelength Observations of the Blazar PKS 0735+178 in Spatial and Temporal Coincidence with an Astrophysical Neutrino Candidate IceCube-211208A," A. Acharyya *et al.*, Astrophys. J. **954**, 70 (2023).
- 281. "A VERITAS/Breakthrough Listen Search for Optical Technosignatures," A. Acharyya *et al.*, Astronomical J. **166**, 84 (2023).
- 280. "Sensitivity of the Cherenkov Telescope Array to TeV photon emission from the Large Magellanic Cloud," A. Acharyya *et al.*, MNRAS **523**, 5353 (2023).
- 279. "Sensitivity of the Cherenkov Telescope Array to spectral signatures of hadronic PeVatrons with application to Galactic supernova remnants," F. Acero *et al.*, Astroparticle Phys. **150**, 102850 (2023).
- 278. "VERITAS Discovery of Very High Energy Gamma-Ray Emission from S3 1227+25 and Multiwavelength Observations," A. Acharyya *et al.*, Astrophys. J. **950**, 152 (2023).
- 277. Search for Ultraheavy Dark Matter from Observations of Dwarf Spheroidal Galaxies with VERITAS, "A. Acharyya *et al.*, Astrophys. J. **945**, 101 (2023).
- 276. "VERITAS and Fermi-LAT Constraints on the Gamma-Ray Emission from Superluminous Supernovae SN2015bn and SN2017egm," A. Acharyya *et al.*, Astrophys. J. **945**, 30 (2023).
- 275. "Sensitivity of the GAPS experiment to low-energy cosmic-ray antiprotons," F. Rogers *et al.*, Astroparticle Phys. **145**, 102791 (2023).
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- 273. "Gamma-ray observations of MAXI J1820+070 during the 2018 outburst," H. Abe *et al.*, MNRAS **517**, 4736 (2022).
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- 2. "Comparison of the N<sub>2</sub>+ Photochemistry at Different Phases of the Solar Cycle," M. R. Torr, D. G. Torr, and R. A. Ong, J. Geophysical Res. **85**, 2171 (1980).
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## Rene A. Ong

### **Invited Talks:**

- 130. "The Search for Primary Antimatter with GAPS," <u>Lecture</u>, University of Trieste, Trieste, Italy, May 18, 2024.
- 129. "The Cherenkov Telescope Array Observatory, Science and Status," <u>Colloquium</u>, Gran Sasso Science Institute (GSSI), L'Aquila, Italy, May 8, 2024.
- 128. "The Search for Primary Antimatter with GAPS," <u>Seminar</u>, Inst. of Physics of the Czech Academy of Sciences (FZU), Prague, Czechia, May 3, 2024.
- 127. "The Cherenkov Telescope Array Observatory: Science and Status," <u>Colloquium</u>, Inst. of Physics of the Czech Academy of Sciences (FZU), Prague, Czechia, May 2, 2024.
- 126. "The Cherenkov Telescope Array: Science and Status", <u>Colloquium</u>, Paul Scherrer Institut (PSI), Villigen, Switzerland, December 16, 2021.
- 125. "Exploring the VHE Universe with the Cherenkov Telescope Array," <u>Seminar</u>, University of Chile, Santiago, Chile, December 10, 2019.
- 124. "An Introduction to CTA: Science, Technique & Implementation," <u>Seminar</u>, ESO Paranal Observatory, Paranal, Chile, December 5, 2019.
- 123. "Introduction to Key Science Projects and Particle Acceleration in CTA," <u>Plenary Talk</u>, The 1<sup>st</sup> CTA Science Symposium, Bologna, Italy, May 5-9, 2019.
- 122. "Cherenkov Telescope Array: Science Goals and Current Status," <u>Plenary Talk</u>, RICAP 2018, 7th Roma Int. Conf. on AstroParticle Physics, Roma Tre University, Rome, Italy, September 7, 2018; published in EPJ Web of Conferences **209** (2019).
- 121. "Cherenkov Telescope Array: Scientific Perspective and Current Status," <u>Seminar</u>, INAF-OAR, Monte Porzio Catone, Italy, September 4, 2018.
- 120. "Cherenkov Telescope Array: Overview and Galactic Science," <u>Invited Talk</u>, 42<sup>nd</sup> COSPAR Scientific Assembly, Session E1.5: Origin of Cosmic Rays, Pasadena CA, July 17, 2012.
- 119. "VHE Astrophysics with the Cherenkov Telescope Array," <u>Astrophysics Seminar</u>, Center for Astrophysics and Space Science (CASS), University of California, San Diego, La Jolla CA, May 2, 2018.
- 118. "Very High-Energy Astrophysics and the Cherenkov Telescope Array," <u>Colloquium</u>, School of Earth and Space Exploration (SESE), Arizona State University, Tempe AZ, September 6, 2017.
- 117. "The Cherenkov Telescope Array," <u>Invited Talk</u>, VERITAS Ten Year Celebration, Whipple Observatory, Amado AZ, June 29, 2017.

- 116. "The Future of Very High-Energy Astrophysics," <u>Seminar</u>, University of Kyoto, Kyoto, Japan, October 4, 2016.
- 115. "The Future of Very High-Energy Astrophysics," <u>Seminar</u>, Institute for Cosmic Ray Research (ICRR), University of Tokyo, Kashiwa, Japan, September 28, 2016.
- 114. "The Future of Very High-Energy Astrophysics," <u>Colloquium</u>, Institute of Space and Astronautical Science (ISAS), Sagamihara, Japan, September 21, 2016.
- 113. "The Future of Very High-Energy Astrophysics, <u>ISEE CICR Colloquium</u>, University of Nagoya, Nagoya, Japan, September 15, 2016.
- 112. "Very High Energy Astrophysics and the Cherenkov Telescope Array," <u>Colloquium</u>, University of British Columbia, Vancouver BC, Canada, December 3, 2015.
- 111. "Very High Energy Astrophysics and the Cherenkov Telescope Array," <u>Colloquium</u>, University of Victoria, Victoria BC, Canada, December 2, 2015.
- 110. "The CTA Key Science Projects," <u>Seminar</u>, INAF-Brera, Milano, Italy, July 2, 2015.
- 109. "The CTA Dark Matter Program," Seminar, INAF-Brera, Milano, Italy, June 30, 2015.
- 108. "The Cherenkov Telescope Array for VHE Astrophysics," <u>Seminar</u>, INAF-Merate, Merate, Italy, June 22, 2015.
- 107. "The Cherenkov Telescope Array for VHE Astrophysics," <u>Seminar</u>, INFN-Padova, Padova, Italy, June 12, 2015.
- 106. "The Chrenkov Telescope Array for VHE Astrophysics," <u>Seminar</u>, INFN-Bari, Bari, Italy, May 27, 2015.
- 105. "The Cherenkov Telescope Array for VHE Astrophysics", <u>Invited Talk</u>, Inauguration of the HAWC Gamma-ray Observatory, Puebla, Mexico, March 19, 2015.
- 104. "Astroparticle Physics," <u>Invited Talk</u>, Nobel Symposium on LHC Results (NS 154), Krusenbergs Herrrgard, Uppsala, Sweden, May 15, 2013.
- 103. "Very High Energy Astronomy and Prospects for CTA," <u>Colloquium</u>, Lowell Observatory, Flagstaff AZ, May 2, 2013.
- 102. "Hunting for the Dark Matter of the Universe," <u>Colloquium</u>, USC Engineering Honors Colloquium, April 26, 2013.
- 101. "The High-Energy Universe," <u>Invited Talk</u>, Scientific Symposium for 50<sup>th</sup> Anniversary of SLAC, SLAC National Accelerator Laboratory, Stanford CA, August 24, 2012.
- 100. "Recent Results from VERITAS", <u>Invited Talk</u>, Victor Hess Centennial Anniversary, 39<sup>th</sup> COSPAR Scientific Assembly, Mysore, India, July 17, 2012.
- 99. "The Mysterious Gamma-ray Universe," <u>Invited Talk</u>, Moreno Valley College, Moreno Valley CA, April 19, 2012.

- 98. "Viewing the Universe in High-Energy Gamma-rays with VERITAS, <u>Colloquium</u>, IAFE-Universidad de Buenos Aires, Buenos Aires, Argentina, September 20, 2011.
- 97. "VHE Galactic Source Highlights from VERITAS," <u>Seminar</u>, IRFU-Saclay, Gif sur Yvette, France, July 28, 2011.
- 96. "GAPS: An Indirect Dark Matter Search using Anti-Deuterons," <u>Invited Talk</u>, Dark Matter Underground and in the Heavens (DMUH 2011), CERN, Geneva, Switzerland, July 26, 2011.
- 95. "VHE Galactic Source Highlights from VERITAS," <u>Seminar</u>, LPNHE-Jussieu, University of Paris VI, Paris France, June 14, 2011.
- 94. "Astrophysical Signatures of Particle Dark Matter," <u>Seminar</u>, LLR-Ecole Polytechnique, Palaiseau, France, May 6, 2011.
- 93. "Particle Astrophysics at the TeV Scale," <u>Colloquium</u>, Department of Physics, Columbia University, New York NY, February 28, 2011.
- 92. "Astrophysical Signatures of Particle Dark Matter," <u>Seminar</u>, Department of Physics, McGill University, Montreal QC, Canada, October 26 2010.
- 91. "VERITAS Explores the TeV Gamma-ray Sky," <u>Colloquium</u>, Department of Physics and Astronomy, University of California, Riverside, Riverside CA, April 28, 2010
- 90. "The VERITAS View of the Very High Energy Universe," <u>Colloquium</u>, Department of Physics, University of Wisconsin, Madison WI, December 4, 2009.
- 89. "Particle Astrophysics at Very High Energies," <u>Colloquium</u>, School of Physics Georgia Inst. of Technology, Atlanta GA, October 28, 2009.
- 88. "Viewing the Universe at Very High Energies," <u>Highlight Talk</u>, Southern California American Assoc.of Physics Teachers (SCAAPT), CalState-Channel Islands, Camarillo CA, May 2, 2009.
- 87. "Viewing the Universe at Very High Energies," <u>Colloquium</u>, Department of Physics, Kansas State University, Manhattan KS, April 28, 2009.
- 86. "Viewing the Universe at Very High Energies", <u>Colloquium</u>, LNS/Astrophysics, Massachusetts Inst. of Technology, Cambridge MA, March 2, 2009.
- 85. "Exploring the Gamma-ray Sky", <u>Public Lecture</u>, Santa Monica Amateur Astronomy Club (SMAAC), Santa Monica CA, November 14, 2008.
- 84. "Particle Astrophysics with VERITAS", <u>Seminar</u>, Kellogg Radiation Laboratory, California Inst. of Technology, Pasadena CA, February 29, 2008.
- 83. "VHE Particle Astrophysics: Science, Projects, Roadmap, and SLAC," <u>Invited Talk,</u> SLAC User's Organization (SLUO), Stanford Linear Accelerator Center, Menlo Park CA, February 7, 2008.

- 82. "The Very High Energy Universe", <u>Colloquium</u>, Department of Physics, University of California, San Diego, La Jolla CA, May 24, 2007.
- 81. "Cosmic Ray Studies to 10<sup>16</sup> eV," <u>Invited Talk</u>, The Cronin Fest, University of Chicago, Chicago IL, September 8, 2007.
- 80. "Very High Energy Gamma-Ray Astronomy: Status and Future," <u>Invited Talk</u>, 6<sup>th</sup> Rencontres du Vietnam: Particle Astrophysics, Hanoi, Vietnam, August 9, 2006.
- 79. "The Landscape for Particle Astrophysics," <u>Colloquium</u>, Department of Physics, University of California, Riverside, Riverside CA, March 16, 2006.
- 78. "The Landscape for Particle Astrophysics," <u>Colloquium</u>, Department of Physics, University of Massachusetts, Amherst MA, March 8, 2006.
- 77. "VHE Astrophysics with VERITAS," <u>Seminar</u>, Department of Physics, University of Toronto, Toronto ON, Canada, March 7, 2006.
- 76. "Exploring the Extreme Universe," <u>Colloquium</u>, Department of Physics, Whittier College, Whittier CA, December 9, 2005.
- 75. "Exploring the Extreme Universe," <u>Colloquium</u>, Department of Physics, University of Alberta, Edmonton AB, Canada, December 2, 2005.
- 74. "Future Landscape for Particle Astrophysics," <u>Seminar</u>, Department of Physics and Astronomy, University of California Los Angeles, Los Angeles CA, October 19, 2005.
- 73. "Summary: Gamma-Ray Science and Techniques," <u>Rapporteur Talk</u>, 29<sup>th</sup> Int. Cosmic Ray Conference, Pune, India, August 10, 2005.
- 72. "Future Facilities in Astroparticle Physics and Cosmology," <u>Plenary Talk</u>, XXII Int. Symposium of Lepton-Photon Interactions at High Energies, Uppsala, Sweden, July 4, 2005.
- 71. "The Extreme Universe," <u>Colloquium</u>, Department of Physics, Columbia University, New York NY, April 18, 2005.
- 70. "Very High Energy Astrophysics," <u>Colloquium</u>, Department of Physics, University of California, Davis, Davis CA, April 13, 2005.
- 69. "The Extreme Universe," <u>Colloquium</u>, Department of Physics, University of Michigan, Ann Arbor MI, March 23, 2005.
- 68. "Report of the Scientific Assessment Group for Experiments in Non-Accelerator Physics, High Energy Physics Advisory Panel (HEPAP), Washington DC, September 24, 2004.
- 67. "The Limits of Particle Physics and Astronomy," <u>Colloquium</u>, Department of Physics, Brown University, Providence RI, March 1, 2004.
- 66. "Observations of Active Galactic Nuclei at Very High Energies," <u>Seminar</u>, Department of Astronomy, University of California San Diego, La Jolla CA, November 4, 2003.

- 65. "Status of VHE Astronomy," <u>Seminar</u>, Laboratory for High Energy Astrophysics (LHEA), Goddard Space Flight Center, Greenbelt MD, October 24, 2003.
- 64. "High-Energy Cosmic Rays," <u>Invited Talk Series</u>, XXXI SLAC Summer Institute, Stanford Linear Accelerator Center, Stanford CA, August 1-2, 2003.
- 63. "The Extreme Universe," <u>Colloquium</u>, Department of Physics, University of California, Irvine, Irvine CA, May 1, 2003.
- 62. "Exploring the High Energy Universe," <u>Seminar</u>, Department of Statistics, University of California, Los Angeles, Los Angeles CA, March 11, 2003
- 61. "Cosmic Ray Frontiers," <u>Opening Talk</u>, Cosmic Ray Astrophysics Symposium, 2003 Meeting of the American Association for the Advancement of Science (AAAS), Denver CO, February 16, 2003.
- 60. "The Status of VHE Astronomy," <u>Conference Summary Talk</u>, Int. Symposium: The Universe Viewed in Gamma Rays, Kashiwa, Japan, September 28, 2002.
- 59. "The VERITAS Project," <u>Invited Talk</u>, Int. Symposium: The Universe Viewed in Gamma Rays, Kashiwa, Japan, September 27, 2002.
- 58. "A Twenty Year Roadmap for Particle Physics," <u>Seminar</u>, Department of Physics and Astronomy, University of California, Los Angeles, Los Angeles CA, December 5, 2001.
- 57. "The Extreme Universe: Probing the Limits of Particle Physics and Astronomy," <a href="Colloquium">Colloquium</a>, Department of Physics, University of Alabama, Tuscaloosa AL, November 14, 2001.
- 56. "The VHE Sky: 2006-2010", <u>Seminar</u>, Meeting of the Gamma Ray Large Area Telescope (GLAST) Collaboration, Stanford University, Stanford CA, August 2, 2001.
- 55. "The Violent Universe: Extending the Limits of Particle Physics and Astronomy," <u>Colloquium</u>, Department of Physics, Sanford University, Stanford CA, February 27, 2001.
- 54. "Astronomy of the Very High Energy Universe," <u>Colloquium</u>, Institute for Theoretical Physics (ITP), University of California, Santa Barbara, Santa Barbara CA, January 26, 2000.
- 53. "VHE Particle Astrophysics," <u>Colloquium</u>, Department of Physics, Southern Methodist University, Dallas TX, February 7, 2000.
- 52. "Very High-Energy Gamma-Ray Astronomy," <u>Overview Talk,</u> Session of the High Astrophysics Division at 195<sup>th</sup> Meeting of the American Astronomical Society (AAS), Atlanta GA, January 13, 2000.
- 51. "Exploring the High Energy Universe," <u>Colloquium</u>, Department of Physics, Iowa State University, Ames IA, December 6, 1999.
- 50. "Exploring the High Energy Universe," <u>Colloquium</u>, Department of Physics, Boston University, Boston MA, November 15, 1999.

- 49. "High-Energy Particles from the Universe," <u>Plenary Talk</u>, XIX Int. Symposium of Lepton and Photon Interactions at High Energies, Stanford University, Stanford CA, August 12, 1999.
- 48. "Detection of 100 GeV Gamma Rays from the Crab Nebula," <u>Seminar</u>, Enrico Fermi Institute, University of Chicago, Chicago IL, May 18, 1999.
- 47. "Exploring the High Energy Universe," <u>Colloquium</u>, Department of Physics, Ohio State University, Columbus OH, April 13, 1999.
- 46. "Exploring the High Energy Universe," <u>Colloquium</u>, Department of Physics and Astronomy, University of California Los Angeles, Los Angeles CA, April 8, 1999.
- 45. "The STACEE Project for High-Energy Gamma-Ray Astrophysics," <u>Seminar</u>, Department of Physics, University of Michigan, Ann Arbor MI, March 15, 1999.
- 44. "Exploring the High-Energy Universe," <u>Seminar</u>, Department of Physics, University of Wisconsin, Madison WI, March 11, 1999.
- 43. "Probing the High-Energy Universe," <u>Colloquium</u>, Department of Physics, Case Western Reserve University, Cleveland OH, February 11, 1999.
- 42. "The STACEE Project," <u>Seminar</u>, Department of Physics, University of New Mexico, Albuquerque NM, October 27, 1998.
- 41. "Gamma-Ray Astrophysics: Recent Results and Future Prospects," <u>Seminar</u>, LPNHE, Ecole Polytechnique, Palaiseau (Paris), France, June 15, 1998.
- 40. "The STACEE Project for High Energy Gamma-Ray Astrophysics," <u>Seminar</u>, Department of Physics, Princeton University, Princeton NJ, April 29, 1998.
- 39. "The STACEE Project for High Energy Gamma-Ray Astrophysics," <u>Seminar</u>, Department of Physics and Astronomy, University of California Los Angeles, Los Angeles CA, March 11, 1998.
- 38. "The STACEE Project for High Energy Gamma-Ray Astrophysics," <u>Seminar</u>, Department of Physics, Rutgers University, New Brunswick NJ, February 10, 1998.
- 37. "The Solar Tower Atmospheric Cherenkov Effect Experiment (STACEE)," <u>Seminar</u>, Department of Physics, University of Pennsylvania, Philadelphia PA, February 9, 1998.
- 36. "Very High Energy Gamma-Ray Astrophysics," <u>Colloquium</u>, Department of Physics, University of Chicago, Chicago IL, October 2, 1997.
- 35. "UHE Cosmic Rays, Topological Defects, and the Diffuse Gamma-Ray Background," Seminar, Enrico Fermi Institute, University of Chicago, Chicago IL, June 2, 1997.
- 34. "Astronomy using Solar Heliostat Mirrors," <u>Seminar</u>, USAF Phillips Laboratory, Kirtland AFB, Albuquerque NM, July 2, 1997.
- 33. "The STACEE Project for Gamma-Ray Astrophysics," <u>Seminar</u>, Center for Particle Astrophysics, University of California, Berkeley, Berkeley CA, May 20, 1997.

- 32. "TeV and PeV Gamma-Ray Astrophysics," <u>Colloquium</u>, Department of Physics, University of Toronto, Toronto ON, Canada, March 13, 1997.
- 31. "Development of the Solar Tower Atmospheric Cherenkov Effect Experiment,"

  <u>Invited Talk</u>, 18<sup>th</sup> Texas Symposium of Relativistic Astrophysics and Cosmology,"

  Chicago IL, December 18, 1996.
- 30. "Gamma-Ray Astronomy using Large Area Solar Heliostat Fields," <u>Seminar</u>, Physics Division, Los Alamos National Laboratory, Los Alamos NM, June 12, 1996.
- 29. "The Death of Cygnus X-3," <u>Seminar</u>, Bartol Research Institute, Newark DE, April 11,1996.
- 28. "The Death of Cygnus X-3," <u>Seminar</u>, Enrico Fermi Institute, University of Chicago, Chicago IL, March 11, 1996.
- 27. "Large Area Atmospheric Cherenkov Detectors for High Energy Gamma-Ray Astronomy," <u>Plenary Talk</u>, 24<sup>th</sup> Int. Cosmic Ray Conference, Rome, Italy, August 29, 1995.
- 26. "High Energy Gamma-Ray Astronomy, 20-200 GeV," <u>Seminar</u>, Department of Physics, Leeds University, Leeds, U.K., June 6, 1995.
- 25. "Astronomy at the Highest Energies," <u>Colloquium</u>, Department of Physics, University of Oregon, Eugene OR, May 4, 1995.
- 24. "Astronomy at the Highest Energies," <u>Colloquium</u>, Department of Physics, Pittsburgh University, Pittsburgh PA, February 20, 1995.
- 23. "Using a Large Solar Array for Gamma-Ray Astronomy," <u>Seminar</u>, Enrico Fermi Institute, University of Chicago, Chicago IL, November 10, 1994.
- 22. "Art in the Realm of the Sciences: Flight and Gravity," <u>Invited Talk</u>, Art Institute of Chicago, Chicago IL, October 22, 1994.
- 21. "Gamma Rays: TeV Energies and Beyond," <u>Invited Talk</u>, Towards a Next-Generation High-Energy Gamma-Ray Telescope, Stanford University, Stanford CA, August 23, 1994.
- 20. "Cosmic Rays Below 10<sup>16</sup> eV," <u>Plenary Talk,</u> Snowmass Summer Study: Particle and Nuclear Astrophysics and Cosmology in the Next Millennium, Snowmass CO, July 6, 1994.
- 19. "Exploratory Work on the Concept of a Large Area Atmospheric Cherenkov Detector," <u>Invited Talk</u>, Int. Workshop Towards a Major Atmospheric Cherenkov Detector III, Tokyo, Japan, May 26, 1994.
- 18. "PeV Gamma-Ray Astronomy," <u>Seminar</u>, Department of Physics, University of Illinois Chicago, Chicago IL, May 2, 1994.
- 17.. "100 TeV Astronomy with the CASA-MIA Detector," <u>Seminar</u>, Department of Physics, University of Illinois, Urbana IL, May 2, 1994.

- 16. "High Energy Gamma-Ray Astronomy," <u>Colloquium</u>, Department of Physics, Indiana University, Bloomington IN, December 6, 1993.
- 15. "Astrophysics at Energies Greater than 100 TeV," <u>Seminar</u>, Department of Physics, University of Michigan, Ann Arbor MI, April 9, 1993.
- 14. "Particle Astrophysics with Gamma Rays at Energies Greater than 10 TeV," <u>Plenary Talk</u>, IV Rencontres de Blois: Particle Astrophysics, Blois, France, June 17, 1992.
- 13. "Physics and Astronomy at PeV Energies," <u>Seminar</u>, Research Division, Stanford Linear Accelerator Center, Stanford CA, March 24, 1992.
- 12. "Physics and Astronomy at Energies of 10<sup>14</sup> eV," <u>Colloquium</u>, Department of Physics, Rice University, Houston TX, February 19, 1992.
- "Results from the CASA-MIA Cosmic Ray and Gamma-Ray Astronomy Facility,"
   <u>Invited Talk</u>, Joint International Lepton-Photon Symposium and Europhysics
   Conference on High Energy Physics, Geneva, Switzerland, July 27, 1991.
- 10. "The Physics and Astronomy of Gamma Rays at PeV Energies," <u>Colloquium</u>, Department of Physics, University of California, Berkeley, Berkeley CA, April 24, 1991.
- 9. "Gamma-Ray Physics and Astronomy at PeV Energies," <u>Seminar</u>, Physics Division, Brookhaven National Laboratory, Upton NY, March 28, 1991.
- 8. "Physics and Astronomy at PeV Energies," <u>Seminar</u>, Department of Physics, Princeton University, Princeton NJ, March 27, 1991.
- 7. "Gamma-Ray Physics and Astronomy," <u>Colloquium</u>, Department of Physics, University of Colorado, Boulder CO, March 15, 1991.
- 6. "Physics and Astronomy at PeV Energies," <u>Seminar</u>, Department of Physics, Harvard University, Cambridge MA, February 21, 1991.
- 5. "PeV Gamma Rays from Astrophysical Point Sources," <u>Seminar</u>, Department of Physics, University of California, Santa Cruz, Santa Cruz CA, February 8, 1991.
- 4. "Results and Prospects for Ultra High Energy Gamma-Ray Astronomy," <u>Colloquium</u>, Physics Division, Argonne National Laboratory, Argonne IL, March 31, 1989.
- 3. "Measurement of the B Hadron Lifetime from Mark II at PEP," <u>Invited Talk</u>, Int. Symposium of Production and Decay of Heavy Flavors, Stanford University, Stanford CA, September 3, 1987.
- 2. "Recent Measurements of the B Hadron Lifetime," <u>Invited Talk</u>, 15<sup>th</sup> SLAC Summer Institute, Stanford Linear Accelerator Center, Stanford CA, August 18, 1987.
- 1. "The Mark II Vertex Drift Chamber," <u>Seminar</u>, Physics Division, Japanese National Laboratory for High Energy Research (KEK), Tsukuba, Japan, May 1983.