DEPARTMENT OF PHYSICS COLLOQUIA

Fall 1999 Schedule

August 30
Randall D. Kamien - University of Pennsylvania
Title: Liquid Crystalline Phases of DNA

September 6
Sara A. Solla – Northwestern University
Title: The Dynamics of Learning from Examples

September 13
Anton Zeilinger - University of Vienna, Austria
Title: Quantum Teleportation and the Nature of Information

September 20 – The Thomas Gold Lecture Series
Bohdan Paczynski – Princeton University
Title: Gravitational Microlensing and the Search for Dark Matter

September 27
Carlos Rovelli – University of Pittsburgh and Centre de Physique Theorique de Luminy, France
Title: Non Perturbative Quantum Gravity

October 4
Eric Siggia – Cornell University
Title: Theory and the Yeast Genome

October 11 – FALL BREAK

October 18
Edward Blucher – University of Chicago
Title: Investigating Difference between Matter and Antimatter

October 25
Venky Narayanamurti – Harvard University
Title: Condensed-Matter and Materials Physics: Basic Research for Tomorrow’s Technology

November 1 – The Kieval Lecture
Steve Vogel – Duke University
Title: Locating Life’s Limits with Dimensionless Numbers

November 8
Edward Kearns – Boston University
Title: The Mysteries of Missing Neutrino’s: Latest Results from Super-K

November 15
Paul Steinhardt – University of Pennsylvania
Title: The Quintessential Universe

November 22
Dan Ralph – Cornell University
Title: Torques and Tunneling in Nano-Magnets

November 29
William Phillips – NIST
Title: Almost Absolute Zero: The Story of Laser Cooling and Trapping
Spring 2000 Schedule

January 24
Patrick Lee – Massachusetts Institute of Technology
Title: Heisenberg Model and d-wave Superconductivity: Spin Chirality Finally Coming out of Hiding

January 31
Laura H. Greene – University of Illinois at Urbana-Champaign
Title: Tunneling into High-Temperature Superconductors: Spectroscopy of Broken Symmetries

February 7
Jean Carlson – University of California at Santa Barbara
Title: Complexity and Robustness

February 14
Sue Coppersmith – University of Chicago
Title: Force Fluctuations in Granular Materials

February 21
Brian Greene – Cornell University
Title: String Theory and the Fabric of Spacetime

February 28
Ira Wasserman – Cornell University
Title: The Expansion of the Universe

March 6
Michael Devoret – Yale University
Title: Single Electron Transfer in Tunnel Junction Circuits

March 13
Sebastien Balibar – Escole Normale Superieure (Paris) and Harvard University
Title: Nucleation: Bubbles, Crystals and Superfluids

March 20 – SPRING BREAK

March 27
Wendy Freedman – Carnegie Observatory
Title: The Hubble Space Telescope Key Project to Measure the Hubble Constant

April 3
Joseph Veverka – Cornell University
Title: Exploring Eros: The First Detailed Spacecraft Study of an Asteroid

April 10
Sir Michael Berry – Bristol University and Andrew D. White Professor-at-Large
Title: Extreme Twinkling, and its Opposite
April 17
Lars Bildsten – University of California at Santa Barbara
Title: Gravitational Radiation from Accreting Neutron Stars: Implications for Millisecond Pulsar Formation and LIGO

April 24
Joseph D. Lykken – Fermi National Accelerator Laboratory
Title: The Search for Extra Dimensions

May 1
Dan Akerib – Case Western Reserve
Title: Looking for WIMPs in the Galactic Halo: The Cryogenic Dark Matter Search

May 8 – The Bethe Lectures
Steve M. Block – Stanford University
Title: Sensory Transduction: Clever Physics by Dumb Organisms
Fall 2000 Schedule

August 28
Hans Bethe – Cornell University
Title: Gamma-Ray Bursts and Hypernovae

September 4
Donald Umstadter – University of Michigan at Ann Arbor
Title: Ultra-High Intensity Laser-Plasma Interactions: Progress, Prospects and Applications

September 11 – The Barbara Cooper Lecture
Ellen D. Williams – University of Maryland
Title: Fluctuations and Stability of Nanostructures

September 18
Andrew Strominger – Harvard University
Title: String Theory and Black Holes

September 25 – The Thomas Gold Lecture Series
Clifford Will – Washington University
Title: Einstein’s Relativity put to Nature’s Test: A Turn-of-the-Century Perspective

October 2, Joint with Nonlinear Systems
Leo Kadanoff – University of Chicago
Title: Making a Splash, Breaking a Neck: The Development of Complexity in Physical Systems

October 9 - FALL BREAK

October 16
David Muller – Bell Labs, Lucent Technologies
Title: How Small is Too Small? Understanding the Electronic Structure of Atomic-Scale Transistors

October 23
Z. Jane Wang – Cornell University
Title: Unsteady Aerodynamics of Insect Flight

October 30
Andy Ruina – Cornell University
Title: The Possible Physics (Mechanics) of Walking

November 6
John Ruhl – University of California at Santa Barbara
Title: Cosmology from the Microwave Background: Boomerang and Beyond

November 13, Joint with Astronomy
Dave Stevenson – California Institute of Technology
Title: Origin of the Earth and Moon
**November 20**
Barbara Jacak – SUNY, Stonybrook
Title: High-Energy Heavy Ion Collisions: The Physics of Super-Dense Matter

**November 27**
Daniel P. Lathrop – University of Maryland
Title: Liquid Sodium Laboratory Models of the Earth’s Outer Cone
Spring 2001 Schedule

January 22
Robert F. Gilmour, Jr. – Cornell University
Title: Electrical Restitution and Cardiac Fibrillation

January 29
Eanna Flanagan – Cornell University
Title: Unstable Rossby Modes in Newly Born Neutron Stars

February 5
Francis J. DiSalvo – Cornell University
Title: The Search for New Thermoelectric Materials or How Does a Condensed Matter Physicist Exploit Chemistry

February 12
Charles Marcus – Harvard University
Title: Small Electronics and Quantum Chaos

February 19
Raman Sundrum – John Hopkins University
Title: Extra Dimensions, the Hierarchy Problem and Gravitational Resonances at Particle Colliders

March 5
Sidney Redner – Boston University
Title: The Statistical Mechanics of Popularity

Mar. 12, Joint with Peace Studies Program and Science and Technology Studies
Jeremiah Sullivan – University of Illinois at Urbana-Champaign
Title: Prospects for the Comprehensive Test Ban Treaty

March 26
Richard Galik – Cornell University
Title: Measurements of the Michel Parameters in Lepton Decays

April 2
Glennys Farrar – New York University
Title: Ultra-High Energy Cosmic Rays: Astrophysics Causing Trouble for Particle Physics, or Vice Versa?

April 9
Anupam Garg – Northwestern University
Title: Spin Tunneling: Magnetic Molecules and Mathematical Mysteries

Apr. 16 – The Bethe Lectures
Wick C. Haxton – University of Washington
Title: Solar Neutrinos and Neutrino Oscillations

Apr. 23 The Bethe Lectures
Wick C. Haxton – University of Washington
Title: Supernovae and Nucleosynthesis

April 30
Hal Evans – Columbia University
Title: The D0 Experiment: Now . . . and Later
Fall 2001 Schedule

September 3
Edwin Salpeter – Cornell University
Title: Heavy Elements in the Galaxy and Tuberculois in the USA

September 10
Sol Gruner and Maury Tigner – Cornell University
Title: Energy Recovery Linac

September 17
Josh Klein – University of Pennsylvania
Title: The Sudbury Neutrino Observatory and the Solar Neutrino Problem

September 24
Juan Maldacena – Harvard University
Title: QCD, Strings and Black Holes: The Large N Limit of Field Theories and Gravity

October – The Salpeter Lecture Series
John Carlstrom – University of Chicago
Title: A New Measurement of Cosmic Microwave Background Anisotropy from the South Pole

October 8 - Fall Break

October 15
Sidney Redner – Boston University
Title: The Statistical Mechanics of Popularity

October 22 – The Kieval Lecture
Eric Cornell – NIST
Title: Artifice and Equilibrium: Experiments with Synthetic and Natural Vortices in a Superfluid Gas

October 29
Ray Goldstein – University of Arizona
TBA

November 5
J.C. Seamus Davis – UC Berkeley
Title: Using Individual Impurity Atoms to Study High-Tc

November 12
Richard L. Liboff – Cornell University
Title: Quantum Billiards and Quantum Chaos

November 19 – No Colloquium

November 26
A.J. Stewart Smith – Princeton University
Title: Observation of CP Violation at the B Factories

December 3
David Hammer – Cornell University
Title: Studies of Extremely High Energy Density Plasmas with Picosecond Time Resolution

Spring 2002 Schedule

January 21
Matthias Neubert – Cornell University
Title: Flavor Delicacies (A Tour Through the Mysteries of Matter)

January 28
Riccardo Giovanelli – Cornell University
Title: Into Thin Air: The Atacama Telescope Project

February 4
Dong Lai – Cornell University
Title: Matter and Radiation in Superstrong Magnetic Fields

February 11
Barbara A. Baird – Cornell University
Title: A Biophysical View of Immune Receptor Action

February 18
Serge Lemay – Delft University
Title: Two-Dimensional Imaging of Electronic Wavefunctions in Carbon Nanotubes

February 25 – The Bethe Lectures
Stanford Woosley – UC Santa Cruz
Title: Core Collapse Supernovae

March 4 - BETHE LECTURE
Stanford Woosley – University of California at Santa Cruz
Title: Type Ia Supernovae

March 11
Hitoshi Murayama – University of California at Berkeley
Title: Big World of Small Neutrinos

March 18 – Spring Break

March 25, Joint with Cornell Libraries
Marty Blume – Editor in Chief, APS
Title: The Physical Review and Physics Publishing: Past and Future

April 1
Lawrence Krauss – Case Western Reserve University
Title: Life, the Universe, and Nothing: The Future of Life in an Expanding Universe

April 8
Csaba Csaki – Cornell University
Title: The Physics of Extra Dimensions

April 15
Susanne Arney – Bell Labs., Lucent Technologies
Title: Design for Reliability of MEMS/MOEMS for Lightwave Telecommunications
April 22 – The Thomas Gold Lecture Series
Frank Shu – President, Tsinghua University, Hsinchu, Taiwan
Title: Protostellar Winds and Jets

April 29
Karel Svoboda – Cold Springs Harbor Imaging Synaptic
Title: Function in the Brain

Fall 2002 Schedule

September 2
Katepalli Sreenivasan – Yale University
Title: Cosmic Background Radiation and Hydrodynamic Turbulence

September 9
Mark Chen – Queens University, Kingston, Ontario, Canada
Title: Solving the Solar Neutrino Problem with the Sudbury Neutrino Observatory

**September 16**  
Paul McEuen – Cornell University  
Title: Electronics and Mechanics with Single Molecules

**September 23**  
David Huse – Princeton University  
Title: Quantum Phase Transitions in Randomly Inhomogeneous Solids

**September 30**  
Nima Arkani-Hamad – Harvard University  
Title: Adventures in Theory Space

**October 7 – The Bethe Lectures**  
Carl E. Wieman – University of Colorado at Boulder  
Title: Resonant BEC

**October 14 – Fall Break**

**October 21 – The Parratt Memorial Lecture**  
Stuart Raby – Ohio State University  
Title: The Puzzle of Charge and Mass

**October 28**  
Lawrence Gibbons – Cornell University  
Title: Probing HEP’s Bose-Einstein Condensate: The Physics Potential of a Linear $e^+e^-$ Collider

**November 4**  
Matthew P.A. Fisher – University of California at Santa Barbara  
Title: Cuprates Amiss: Subtle Simplicity or a Matted Mess

**November 11**  
Krishna Rajagopal – Massachusetts Institute of Technology  
Title: The Condensed Matter Physics of QCD

**November 18**  
Allen MacDonald – University of Texas at Austin  
Title: Ferromagnetism in Diluted Magnetic Semiconductors

**November 25**  
Avi Loeb – Harvard University  
Title: The First Source of Light in the Universe

**December 2**  
David DiVincenzo – IBM, T.J. Watson Research Center  
Title: Prospects for Quantum Computation
Spring 2003 Schedule

January 20
Kurt Gottfried - Cornell University
Title: P.A.M. Dirac and the Discovery of Quantum Mechanics

January 27
Naomi Makins - UIUC
Title: Spin Structure of the Proton: Recent Results from HERMES

February 3
Dr. V. Sahakian - Cornell University
Title: String Theory without Equations

February 10
Paul Selvin - University of Illinois, Urbana-Champaign
Title: Nanometer Resolution with Single Molecule Fluorescence Imaging: Application to Biomolecular Motors

February 17
Henry Kelly - President of the Federation of American Scientists
Title: The Future of National Science Policy

February 24
Nitin Samarth - Pennsylvania State University
Title: Semiconductor Spintronics

March 3
Lynn Orr - University of Rochester
Title: Why is the Top Quark Special, and How Can We Exploit It?

March 10
Mats Selen - University of Illinois
Title: Education in Bulk: The Introductory Physics Courses Revisions at Illinois

March 17 - SPRING BREAK

March 24 – The Bethe Lectures
Bert Halperin - Harvard University
Title: One-Dimensional Metals in Theory and Experiment

March 31
Hasam Padamsee - Cornell University
Title: Will Superconductivity Propel the Next-Generation Accelerators?

April 7
David Spergel - Princeton University Title: MAP First Year Results: Implications for Cosmology
April 14
Aida El Khadra - University of Illinois, Urbana-Champaign
Title: The Charm and Beauty of Lattice QCD

April 21
Daniel Gauthier - Duke University
Title: Controlling Cardiac Dynamics

April 28 – The Salpeter Lecture Series
Shri Kulkarni - California Institute of Technology
Title: Gamma-Ray Bursts: Brilliant Explosions Across the Universe
Fall 2003 Schedule

September 8
Michelle Wang - Cornell University
Title: Probing Gene Expression and Regulation at the Single Molecule Level

September 15
Stuart Freedman - University of California at Berkeley
Title: First Results from KamLAND

September 22
Eshen Ben-Jacob - Tel Aviv University
Title: Why Bacteria Go Complex: Higher Flexibility for Better Adaptability

September 29
Scott A. Diddams - National Inst of Standards, Boulder, Colorado
Title: Optical Atomic Clocks: Science and Metrology on the Femtosecond Time Scale

October 6
Martin Schmaltz - Boston University
Title: New Physics at the LHC: Maybe the Little Higgs

October 13 - FALL BREAK

October 20
Qun Shen – Cornell University
Title: X-Ray Imaging and Microscopy Applications and Future Opportunities with an ERL Source

October 27
Carlos Bustamante - University of California at Berkeley
Title: Grabbing the Cat by the Tail: Studies of the Packaging of DNA by Single Ph29 Bacteriophage Particles using Optical Twizers

November 3
Valery Nesvizhevsky - Institute Laue - Langevin, France
Title: Quantum States of Neutrons in the Gravitational Field, Short-Range Forces and Interaction of Ultracold Neutrons with Nanoparticles

November 10
Boris Altshuler - Princeton University and NEC Laboratories-America
Title: Disorder + Interactions in Electronic Systems

November 17
Bob Ecke - Los Alamos National Laboratory
Title: Granular Chains: Knots, Random Walks and Statistical Mechanics

November 24
Jim Cordes - Cornell University
Title: The Radio Universe: Arecibo and Next Generation Radio Telescopes

December 1
Gerald Gabrielse - Harvard University
Title: Observations of Cold Antihydrogen and Fundamental Measurements
Spring 2004 Schedule

January 26
Gerry Jackson - Hbar Technologies, LLC
Title: Chasing the Dream of Antimatter Commercialization

February 2
Harold Rose - LBL - Government
Title: State and Prospects of Aberration-Corrected High-Resolution Energy-Filtering Electron Microscopes

February 9
Gabriela Gonzalez - Louisiana State University
Title: Gravitational Waves: New Eyes for Physics and Astronomy

February 16
Greg Landsberg - Brown University
Title: Out-of-This World Physics: Probing Quantum Gravity in the Lab

February 23
Abraham Stroock - Cornell University
Title: Patterning Microflows

March 1
Sivan Kartha - Stockholm Environment Institute's Climate Program
Title: The Carbon-Hydrogen Bond: How Strong is the Interaction between Global Warming and the "Hydrogen Economy?"

March 8
Subir Sachdev - Yale University
Title: Quantum Phase Transitions: From Mott Insulators to the Cuprate Superconductors

March 15
Joanna Aizenberg - Bell Laboratories, Lucent Technologies
Title: Lessons in Optics from the Deep

March 22 - SPRING BREAK

March 29 – The Thomas Gold Lecture Series
Charles Townes - University of California

April 5
Viet Elser - Cornell University
Title: Phase Retrieval with Atoms, Bits and Pixels

April 12 – The Bethe Lectures
Bruce Winstein - University of Chicago
Title: The Allure of the Neutral Kaons
April 19 – The Bethe Lectures
Bruce Winstein - University of Chicago
Title: Searching for Patterns in the Polarization of the Cosmic Microwave Background Radiation

April 26 – The Kieval Lecture
David Spergel - Princeton University
Title: WMAP and Beyond: Implications of Microwave Background Observations

May 3 – The Salpeter Lecture Series
Andrea Ghez - University of California at Los Angeles
Title: Unveiling a Supermassive Black Hole at the Center of Our Galaxy
FALL 2004 Schedule

August 30
Bruce Knuteson - Massachusetts Institute of Technology
Title: Searching for a Guaranteed Surprise: Systematic Analysis of Frontier Energy Collider Data

Sept. 6 – Labor Day, No Colloquium

September 13
Juan Carlos Campuzano - University of Illinois
Title: What Does Photoemission Tell us About the Electrons in High Temperature Superconductors?

September 20
Cumrun Vafa - Harvard University
Title: Quantum Foam and Melting Crystal

September 27
Daniel Kleppner - Massachusetts Institute of Technology
Title: Can A Boost-Phase Intercept System Assist Missile Defense?

October 4
David R. Nelson - Harvard University
Title: Spherical Crystallography: Virus Buckling and Grain Boundary Scars

October 11 – FALL BREAK

October 18 – The Bethe Lectures
Albert Libchaber - Rockefeller University
Title: Some Physical Aspects of the Origin of Life and of Artificial Cells

October 25 – The Bethe Lectures
Albert Libchaber - Rockefeller University
Title: From Physics Techniques to Biological Observation

November 1
Peter Lepage - Cornell University
Title: The Fall and Rise of Lattice QCD, Part II: High-Precision Lattice QCD Confronts Experiment

November 8
Roy Briere - Carnegie Mellon University
Title: First Results from CLEO-c and CESR-c

November 15
Michael Peskin - Stanford University
Title: The International Linear Collider: The Next Step in High-Energy Electron-Positron Physics

November 22
Sidney Nagel - University of Chicago
Title: Physics and the Breakfast Table
November 29 – The Thomas Gold Lecture Series
Geoff Marcy - University of California at Berkeley
Title: The Properties of Planetary Systems
Spring 2005 Schedule

January 24
Dung-Hai Lee - University of California at Berkeley
Title: From Landau Order to Topological Order

January 31 – No Colloquium

February 7
Ben Widom - Cornell University
Title: What's New with Gibb's Absorption Equation

February 14
Steve Squyres - Cornell University
Title: Science Results from the Mars Exploration Rover Mission

February 21
Wolfgang Ketterle - Massachusetts Institute of Technology
Title: Bose-Einstein Condensation of Atoms, Molecules, and Fermion Pairs

February 28
Alexander Szalay - Johns Hopkins University
Title: Large Scale Structure of the Universe

March 7
Jonathan L. Rosner - Enrico Fermi Institute - University of Chicago
Title: The Buzz of B’s - News of the Fifth Quark

March 14 – The Kieval Lecture
Buford Price – UC Berkeley
Title: Interconnectedness of Science: 10 12 eV Neutrinos, Climate, Volcanism, and Life in Ice

March 21 - SPRING BREAK

March 28
Majorie Shapiro - UC Berkeley
Title: Why Does the W have Mass? Prospects for Uncovering the Source of Electroweak Symmetry Breaking

April 4
Matthias Troyer - Swiss Federal Institute of Technology, Zurich, Switzerland
Title: Simulating Quantum Phase Transitions: From Quantum Magnets to Ultra-Cold Atomic Gases

April 11
Ian Shipsey - Purdue University
Title: Bringing Hearing to the Deaf - Cochlear Implants: A Technical and Personal Account

April 18
Michel Devoret - Yale University
Title: The Quantronium: A Quantum-Mechanically Coherent Electrical Circuit Behaving Like An Atom
April 25
Jainendra Jain - Pennsylvania State University
Title: Composite Fermions: Why They Are and What They Do

May 2 – The Salpeter Lecture Series
Victoria Kaspi - McGill University
Title: Magnetars
FALL 2005 Schedule

September 5 – Labor Day

September 12 – The Kieval Lecture
Gary Westfall - Michigan State University
Title: Recent Results from RHIC: Towards a Better Understanding of Polymer-Induced Frag Reduction

September 19
Dung Hai Lee - University of California at Berkeley
Title: How to Block Nature’s Tendency to Order

September 26
Pierre Ramond - University of Florida
Title: Sunshine at Midnight

October 3 – The Parratt Lecture
Stephen Olsen - University of Hawaii
Title: Homeless Mesons

October 10 – Fall Break

October 17 – The Bethe Lectures
Donald M. Eigler - IBM Almaden Research Center
Title: Information Transport and Computation in Nanometer-Scale Structures

October 24 – The Bethe Lectures
Donald M. Eigler - IBM Almaden Research Center
Title: Single-Atom Spin-Excitation Spectroscopy

October 31
Karin A. Dahmen - University of Illinois - Urbana-Champaign
Title: Crackling Noise and Disorder: Learning from Magnets and Earthquakes

November 7
John Spence - Arizona State University and Lawrence Berkeley National Labs
Title: Diffraction from a Beam of Laser-Aligned Proteins, and some Cavendish History

November 14
Neal Lane - Rice University
Title: The Future of U.S. Science - Storm Clouds on the Horizon

November 21
John Reppy - Cornell University
Title: The Search for the Super Solid

November 28
Paul Chaikin - New York University
Title: Jammed Ellipsoids Beat Jammed Spheres: Experiments with Candies, Colloids and Crystals
Spring 2006 Schedule

**January 23**  
Sarah Eno - University of Maryland  
Title: The LHC Adventure

**January 30**  
Amir Yacoby - Weizmann Institute of Science, Rohovot, Israel  
Title: Coherent Control and Manipulation of Two-Electron Spin States

**February 6**  
David Weitz - Harvard University  
Title: Dripping, Jetting, Drops, and Wetting: The Magic of Microfluidics

**February 13** - No Seminar Today

**February 20**  
Philip Kim - Columbia University  
Title: Quantum Electrodynamics at your Pencil Tips: Dirac Fermion in Graphite

**February 27**  
A. Douglas Stone - Yale University  
Title: Einstein's Unknown Insight and the Problem of Quantizing Chaotic Motion

**March 6**  
Amber Miller - Columbia University  
Title: Peeking in Ancient Holes and Seeking the Holy Grail

**March 13**  
Maxim Perelstein - Cornell University  
Title: Electroweak Symmetry Breaking

**March 20 - SPRING BREAK**

**March 27**  
Gary Horowitz - University of California at Santa Barbara  
Title: Spacetime in String Theory

**April 3**  
Barry C. Barish - California Institute of Technology  
Title: Probing the Universe for Gravitational Waves

**April 10**  
Lene Hau - Harvard University  
Title: Frozen Light

**April 17 – The Salpeter Lecture Series**  
Avi Loeb - Harvard University
Title: The Frontier of 21cm Cosmology: Probing Reionization As Well As The Inflationary Initial Conditions

April 24
Eberhard Bodenschatz - Cornell University
Title: The Cornell Experiments on Fluid Turbulence

May 1
Sunil Golwala - California Institute of Technology
Title: The Search for WIMP Dark Matter

May 8
Harold Shapiro - Princeton University
Title: Particle Physics at the Crossroads: Charting the Course for Elementary Particle Physics in the 21st Century
FALL 2006 Schedule

August 28
Bill Louis - Los Alamos National Laboratory
Title: Searching for Neutrino Oscillations with MiniBooNE

Sept. 4 – Labor Day

September 11
Mark Trodden - Syracuse University
Title: Gravitational Approaches to Cosmic Acceleration

September 18
Kerry Emanuel - Massachusetts Institute of Technology
Title: Is Global Warming Increasing Hurricane Activity?

September 25
Persis Drell - Stanford University
Title: GLAST: The Gamma Ray Large Area Space Telescope

October 2
Csaba Csaki - Cornell University
Title: Searching for the Mechanism of Electroweak Symmetry Breaking

October 9 – Fall Break

October 16 – The Bethe Lectures
David Gross - Kavli Institute for Theoretical Physics, UC at Santa Barbara
Title: The Search for a Theory of Fundamental Reality: The Theory of Elementary Particles

October 23
Ziao-Gang Wen - Massachusetts Institute of Technology
Title: An Origin of Light, Fermions, and Gravity

October 30
Henry Greenside - Duke University
Title: Songbirds and Synfire Chains

November 6
Greg Boebinger - Florida State University
Title: Levitation, Superconductivity, and the World's Largest Magnets

November 13
Michael Oppenheimer - Princeton University
Title: How Warm is Too Warm? Global Warming, Sea Level Rise, and the Future of the Polar Ice Sheets

November 20
Neil Ashby - National Institute of Standards and Technology
November 27
Daniel Fisher - Harvard University
Title: Is Evolution Understood? Quantitative Questions from a Statistical Mechanic
Spring 2007 Schedule

January 22 - Special Physics Colloquium
Daniel Freedman - Cornell University
Title: Empirical Insights from a Physicist's Year as a Grunt in Iraq

January 29 – The Kieval Lecture
Lisa Randall - Harvard University
Title: Searching for Warped Geometry at the LHC

February 5
Saul Teukolsky - Cornell University
Title: Black Holes and Gravitational Waves

February 12
Steve Peggs - Brookhaven National Lab.
Title: Accelerator Science at the LHC Frontier

February 19
Angela Olinto - University of Chicago
Title: New Era in UHE AstroParticle Physics

February 26
Carl Bender - Washington University - St. Louis
Title: Making Sense of Non-Hermitian Hamiltonians

March 5
Lars Bildsten - UC at Santa Barbara
Title: Explosions in Accreting White Dwarfs: From Classical Novae to Supernovae

March 12 – The Bethe Lectures
Joe Polchinski - Kavli Institute for Theoretical Physics - UC at Santa Barbara
Title: Gauge/Gravity Duality: From Black Holes to the Bethe Ansatz

March 19 - Spring Break

March 26
Richard Packard - UC Berkeley
Title: Superfluid Weak Links: Physics and Applications

April 2 – The Salpeter Lecture Series
Jonathan Lunine - University of Arizona
Title: The Past, Present and Future of Methane of Titan

April 9
Matthew Pritchard - Cornell University
Title: Imaging SubCentimeter Ground Deformation from Space
April 16
Richard L. Garwin - IBM T.J. Watson Research Center
Title: A Major Expansion of Nuclear Power to Fight Global Warming? Problems and Prospects."

April 23
Michael Riordan - University of California
Title: US Big-Science Lessons from the SSC

April 30 – No Colloquium
ALTERNATIVE: Harold Varmus Subject: Science, Policy and Education

Fall 2007 Schedule

August 27
Henry Tye - Cornell University
Title: How Our Universe Began?

**September 3 - LABOR DAY**

**September 10**
William Bialek - Princeton University
Title: Physics Problems in Early Embryonic Development

**September 17**
Kyle Shen - Cornell University
Title: Shedding Light on Mysteries in the Solid State

**September 24**
David Goldhaber-Gordon - Stanford University
Title: Designer Hamiltonians in the Laboratory: Observation of Many Body Physics in a Semiconductor Nanostructure

**October 1**
Keith Schwab - Cornell University
Title: Quantum Mechanics with Mechanical Objects: Chasing Schrödinger's Whisker

**October 8 - FALL BREAK**

**October 15**
Geoffrey West - Santa Fe Institute
Title: Size Matters: Growth, Innovation and the Pace of Life from Cells to Cities

**October 22**
Robert Gilmour - Cornell University
Title: Nonlinear Dynamics of Heart Rhythm Disorders

**October 23 – The Thomas Gold Lecture Series, Joint with Astronomy**
Andrew Lyne - Australia

**October 29**
Steven Kivelson - Stanford University
Title: Electronic Liquid Crystals

**November 5**
Adam Burrows - University of Arizona
Title: Theories of the Explosive Death of Massive Stars

**November 12**
Francis Everitt - Stanford
Title: Testing Einstein in Space: Gravity Probe B & STEP

**November 19**
Anthony Leggett - UIUC
Title: Testing the Limits of Quantum Mechanics: Motivation, State of Play, Prospects

November 26
Neal Weiner - New York University
Title: Illuminating Dark Matter
Spring 2008 Schedule

January 21
Steven M. Girvin - Yale University
Title: Circuit QED: What is the Electric Field of a Single Photon?

January 28
Seamus Davis - Cornell University
Title: Quasiparticle Extinction Due to Mottness - the Achilles’ Heel of High-Tc Superconductivity

February 4
Andrew Cohen - Boston University
Title: Electroweak Superconductivity

February 11
Suzanne Staggs - Princeton University
Title: Wringing Yet More Reality from the Cosmic Microwave

February 18
Denise Freed - Schlumberger-Doll Research
Title: The Physics of Crude Oils: What Downhole Nuclear Magnetic Resonance can tell us about Crude Oil

February 25
Erich Mueller - Cornell University
Title: Ultracold Fermions

March 3 - Special Colloquium
Mildred Dresselhaus - President APS
Title: Remarkable Nanostructured Forms of Carbon

March 10
Eric G. Adelberger - University of Washington
Title: Recent Gravitational Experiments and their Implications for Particle Physics

March 17 – Spring Break

March 24
David Nelson - Harvard University
Title: Gene Surfing in Microorganisms

March 31
Judy Franz - American Physics Society
Title: An Adventure in Physics outside the Laboratory

April 7
Markus Greiner - Stanford University
Title: Quantum Simulations with Ultracold Atoms

**April 14 – The Bethe Lectures**
Steve Chu - Stanford University
Title: What We Can Learn from Single Molecule Experiments of Biological Systems

**April 21 – The Salpeter Lecture**
Alexei Filippenko - UC at Berkeley
Title: Evidence from Type Ia Supernovae for an Accelerating Universe and Dark Energy

**April 28**
Elena Aprile - Columbia University
Subject: The Search for Dark Matter with the XENON Equipment

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**Fall 2008 Schedule**

**September 8**
Paul McEuen - Cornell University
Title: Nano Carbon: From String Theory to Atomic Drums

September 15
John Clarke - UC Berkeley
Title: The Ubiquitous SQUID: From Cosmology to Medicine

September 22
Maxim Perelstein - Cornell University
Title: Physics Beyond the Standard Model: Questions for the LHC

September 29
Doug Glenzinski - FNAL
Title: Twilight at the Tevatron

October 6
Raman Sundrum - John Hopkins
Title: Extra Dimensions and the LHC

October 13 - Fall Break

October 20 – The Bethe Lectures
Robert Kirshner-Harvard University
Title: The Mystery of Dark Energy

October 27
Margaret Murnane - JILA & Univ. of Colorado
Title: Harnessing Attosecond Science for Coherent X-Ray Generation and Applications

November 3
Anders Ryd - Cornell University
Title: THE CMS Experiment: Meeting the LHC Challenge

November 10
John Beamish - University of Alberta, Canada
Title: Flow and Elastic Properties of Helium: Is It a “Supersolid”?

November 17
Ron Poling - University of Minnesota
Title: CESR and CLEO: Thirty Years Shaping the Standard Model

November 24
Natalie Mahowald - Cornell University
Title: Desert Dust, Climate and Biogeochemistry

December 1
Nergis Mavalvala - Massachusetts Institute of Technology
Title: Quantum Mechanics on Giant Scales
Spring 2009 Schedule

January 19
Piet Brouwer - Cornell University
Title: Quantum Transport without Planck’s Constant

January 26
Andrea Liu - University of Pennsylvania
Title: The Physics of Cell Crawling

**February 2 – The Kieval Lecture**
Paul Doherty - Exploratorium
Title: Physics at a Science Museum

**February 9**
Eva Silverstein - Stanford University
Title: Inflation, String Theory, and Signatures in the CMB

**February 16**
Andy Ruina - Cornell University
Title: Rotation with Zero Angular Momentum: Demonstrations of the Falling Cat Phenomenon Go Sour

**February 23**
Young-Kee Kim - Fermilab
Title: E = mc^2: High Energy and Intensity Opens Windows on the World

**March 2**
Kurt Gottfried - Cornell University
Title: Nuclear Terrorism

**March 9**
Jan Zaanen - Univ Leiden, The Netherlands
Title: Planckian Dissipation

**March 16 – Spring Break**

**March 23 – The Bethe Lectures**
Paul Chu - Houston/HKUST
Title: From BCS through HTS to RTS?

**March 30**
Andrzej Buras - Technical University in Munich
Title: An Excursion into the Attouniverse: Probing New Physics at Very Short Distance Scales Through Rare Processes

**April 6**
Alex Gaeta - Cornell University
Title: Interactions of Light with Atoms and Molecules in Photonic Crystal Fibers

**April 13**
John Learned - University of Hawaii
Title: The Age of Neutrino Physics: A Rapid Overview and Description of a New 10 Kiloton Instrument Called Hanohano

**April 20**
Arjun Yodh - Univ of Pennsylvania
Title: Melting, Frustration and Aging in Temperature-Sensitive Colloids

April 27 – The Salpeter Lecture Series
Giles Chabrier - Ecole Normale Superieure de Lyon
Title: Recent Results in Exoplanet Formation, Structure and Evolution

Fall 2009

August 31
Dan Ralph - Cornell University
Title: Putting the Electron’s Spin to Work

September 7 - Labor Day

September 14
Subir Sachdev - Harvard University
Title: Quantum Criticality: from Antiferromagnets to the Cuprate Superconductors

September 21
Peter Fisher – Massachusetts Institute of Technology
Title: WiTricity: An Odd Adventure into the Real World

September 28
Itai Cohen - Cornell University
Title: Flight of the Fruit Fly

October 5
Paul Ginsparg – Cornell University
Title: Open Access: From Myth to Paradox

October 12 - Fall Break

October 19
Edward Farhi - MIT
Title: A Quantum Computer Can Determine Who Wins a Game Faster Than a Classical Computer

October 26
Wolfgang Bauer - Michigan State University
Title: Increasing the Number of Physics Majors - How Do We Do It?

November 2
Zvi Bern - UCLA
Title: Harmony of Scattering Amplitudes: From Quantum Chromodynamics to Gravity

November 9
Steve Ritz - NASA
Title: Fermi at 17 Months

November 16
Humphrey Maris - Brown University
Title: “Experiments with Single Electrons in Liquid Helium”

November 23
Jennifer Mass - Winterthur Museum
Title: Art Meets Science: Discovering Hidden Images and Vanishing Masterpieces in Paintings

November 30
Bart Selman - Cornell University
Title: Solving Large-Scale Computational Problems Using Insights from Statistical Physics
Spring 2010 Schedule

January 25
Vinay Ambegaokar - Cornell University
Title: Entropy and Time

February 1
Matthew Fisher - CalTech
Title: Quantum Crystals, Quantum Choreography and Quantum Computing

February 8
Eugene Demler - Harvard University
Title: Learning About Order from Noise

February 15
Andrew Mackenzie - University of St. Andrews
Title: Complex Oxides: A New Playground for Physics and Technology

**February 22**
Stan Leibler - The Rockefeller University
Title: Protein Sectors: History Versus Function

**March 1**
David DiVincenzo - IBM T. J. Watson Research Center
Title: Prospects for Realizing Quantum Computers

**March 8**
Nathan Seiberg - Institute for Advanced Study, Princeton
Title: Supersymmetry and its Breaking

**March 15**
Chris Polly - Fermilab
Title: Precision precession: How the history of g-2 wound its way to Fermilab

**March 22 - Spring Break**

**March 29**
Yuval Grossman - Cornell University
Title: Flavor Physics

**April 5**
Chad Orzel - Union College
Title: My Dog About Science: Why Public Communication of Science is Important, and How Social Media Can Help

**April 12**
Jiwoong Park - Cornell University
Title: Accurate Carbon Nanostructures

**April 19**
Chris Myers - Cornell University
Title: The Curiosity of Dimensionality in Systems Biology

**April 26**
Persis Drell - Stanford
Title: The Turn On of LCLS: The X-Ray Free-Electron Laser at SLAC

**May 3**
Kathryn Moler - Stanford University
Title: Mesoscopic Magnetic Measurements

**May 10 – The Salpeter Lecture**
David Spergel – Princeton
Title: The Cosmic Microwave Background as a Probe on the Very Early Universe

Fall 2010 Schedule

August 30
Sol Gruner - Cornell University
Title: Biomolecules Under Pressure: Why it Matters

September 6 - Labor Day

September 13
Steve Strogatz - Cornell University
Title: Writing About Math for The New York Times

September 20
Alyssa Apsel - Cornell University
Title: Firefly Radios: Biologically Inspired Ultra-low Power Radio Networks

September 27
Louis Taillefer - Sherbrooke University
Title: The Two Mysteries of Superconductivity

October 4
Daniel Schrag - Harvard University
Title: A Path Forward on Climate and Energy

October 4 – 8 - Messenger Lecture Series
The Future of Fundamental Physics
Nima Arkani-Hamed - IAS Princeton
October 4: Setting the Stage: Space-Time and Quantum Mechanics

October 5: Our “Standard Models” of Particle Physics and Cosmology, and Their Discontents

October 6: Space-Time is Doomed; What Replaces It?

October 7: Why is There a Macroscopic Universe?

October 8: A New Golden Age of Experiments: What We Might Know By 2020

October 11 - Fall Break

October 18
Andrew Millis - Columbia University
Title: Materials with Strong Electronic Correlations: The (Theoretical) End of the Beginning?

October 25
Holger Mueller - UC Berkeley
Title: Gravitational Redshift, Equivalence Principle, and Matter Waves

October 27 – The Thomas Gold Lecture, Special Joint Physics-Astronomy Colloquium
Rashid Sunyaev - Max Planck Institute for Astrophysics, Garching, Germany
Title: The Richness and Beauty of the Physics of Cosmological Recombination

November 1
Richard Schnee - Syracuse University
Title: What’s the Matter in the Universe? Direct Searches for WIMP Dark Matter

November 8
Csaba Csaki - Cornell University
Title: Electroweak Symmetry Breaking and the Physics of the TeV Scale

November 15
Peter Wittich - Cornell University
Title: CMS: The LHC Era Begins

November 22
Charles Marcus - Harvard University
Title: Building Schrödinger’s Chip

November 29
David Meyerhofer - University of Rochester
Title: Inertial Confinement Fusion: On the Path to Ignition

Spring 2011 Schedule

January 24
Ben Kilminster - Fermilab
Title: Massive Search Pushes Higgs Particle into Corner at Fermilab

January 31
Aaron Pierce – University of Michigan
Title: Developments in the Hunt for the Identity of the Dark Matter

February 7
Henry Chapman – Center for Free-Electron Laser Science DESY
Title: Femtosecond X-Ray Protein Nanocrystallography

February 14
Michael Lawler – SUNY Binghamton / Cornell University
Title: Electronic Liquid Crystal Correlations in the Pseudogap States of High Tc Superconductors

February 21 – The Krumhansl Lecture
Nynke Dekker – Kavli Institute of NanoScience, TU Delft
Title: Single-Molecule Torque Spectroscopy for Biophysical Investigations

February 28 – The Cooper Lecture
Wim Leemans – Lawrence Berkeley National Laboratory
Title: Laser Plasma Accelerators: From Dream Towards Reality

March 7 – Cancelled

March 14 – The Salpeter Lectures
Sara Seager - MIT
Title: Exoplanet Mass, Radius, and the Physics of Exoplanetary Interiors

March 21 - Spring Break

March 28
William Bertsche – Swansea University
Title: Trapped Antihydrogen

April 4
Anders Ryd – Cornell University
Title: First Year of CMS Operation: Operational Experience and First Physics Results

April 11 – The Bethe Lectures
Wolfgang Ketterle - MIT
Title: Superfluid Gases Near Absolute Zero Temperature

April 18
Matias Zaldarriaga – IAS Princeton
Title: The Initial Conditions of the Hot Big Bang

April 25
Lars Bildsten – KITP UC Santa Barbara
Title: Diverse Energy Sources for Supernovae

May 2 - Cancelled
Fall 2011 Schedule

August 29
David Mermin – Cornell University
Title: What has quantum mechanics to do with factoring? Things I wish they had told me about Shor's algorithm.

September 5 – Labor Day

September 12 – Cooper Lecture
Thomas Mason – UCLA
Title: Entropy and Geometry: From Directed Self-Assembly to Phase Behavior of Custom-Shaped Colloids

September 19
Julia Thom – Cornell University
Title: The First Year of LHC Data: What We’ve Found and What We Haven’t

September 26 – The Bethe Lectures
Paul Alivisatos – Lawrence Berkeley National Laboratory
Title: The Science of Nanocrystals in Six Easy Pieces

October 3
Matthias Liepe – Cornell University
Title: RF Superconductivity. What Makes the Cornell ERL Go?

October 10 – Fall Break

October 17
Christian Ott – Caltech
Title: Stellar Collapse, Core-Collapse Supernovae, and the Formation of Stellar-Mass Black Holes

October 24
Charles Kane – University of Pennsylvania
Title: From Topological Insulators to Majorana Fermions

October 31 – The Kiev Lecture
Sean Carroll – UCLA
Title: The Origin of the Universe and the Arrow of Time

November 7
Jonathan Feng – UC Irvine
Title: Dark Particles: WIMPS and Beyond

November 14 – Cancelled

November 21
Roberto Car – Princeton University
Title: Quantum Mechanics and Hydrogen Bonds

November 28
Stewart Prager – Princeton Plasma Physics Laboratory
Title: The Path to Magnetic Fusion Energy
Spring 2012 Schedule

January 23
Liam McAllister – Cornell University
Title: Cosmological Windows on Planck-Scale Physics

January 30
Michael Crommie – UC Berkeley
Title: The Electrons in Your Pencil: Observations of a Carbon Flatland

February 6
Yanbei Chen – Caltech
Title: Kilogram-scale Mirrors as Quantum Objects

February 13
Charles Bennett – IBM Research
Title: Quantum Information, the Ambiguity of the Past, and the Complexity of the Present

February 20
Alex Gaeta – Cornell University
Title: Temporal Magnification, Compression, and Cloaking of Light

February 27
Rafael Lang – Purdue University
Title: Dark Matter and How To Discern It

March 5 – The Parratt Lecture
Carl Lineberger – JILA/CU Boulder
Title: Energy Flow and Sequestration in Partially Solvated ICN and ICN-
Small molecules trying to act large

March 12 – The Salpeter Lecture
Eliot Quataert – UC Berkeley
Title: Searching for the Electromagnetic Counterparts to Gravitational Wave Sources

March 19 – Spring Break

March 26
Michael Peskin – Stanford University
Title: The Search for New Elementary Particles at the CERN Large Hadron Collider

April 2
Vivek Sharma – UC San Diego
Title: The Hunt for the Higgs Boson at CERN

April 9 – The Thomas Gold Lecture
Maria Zuber – MIT
Title: The Geophysics of Mercury from the MESSENGER Mission

April 16
Doug Smith – UC San Diego
Title: Single-molecule studies of polymer physics and viral DNA packaging

April 23 – Cancelled

April 30 – The Bethe Lectures
Lisa Randall – Harvard University
Title: Particle Physics Today
Fall 2012 Schedule

August 27
John A. Johnson – Caltech
Title: Hot on the Trail of Warm Planets Orbiting Cool M Dwarfs
Host: Eanna Flanagan

September 3 – Labor Day

September 10
Sean Hartnoll – Stanford University
Title: Ohm's Law and Black Holes
Host: Liam McAllister

September 17
Kyle Shen – Cornell University
Title: Teaching Electrons New Tricks in Artificial Quantum Materials

September 24
Markus Luty – UC Davis
Title: The Higgs Confronts Three Universes at the LHC
Host: Csaba Csaki

October 1
Ivan Bazarov – Cornell University
Title: Cornell High Brightness Photoinjector: Beyond the “Star Wars”

October 8 – Fall Break

October 15 – The Bethe Lectures
John Carlstrom – University of Chicago
Title:  Cosmological Physics with the Cosmic Microwave Background: New results from the South Pole Telescope
Host:  Ira Wasserman

October 22
Michael Brenner – Harvard University
Title:  Linear Algebra and the Shape of Bird Beaks
Host:  Jane Wang

October 29 – Cancelled

November 5
Kyle Cranmer – New York University
Title:  Discovery! How we did it and what we know so far
Host:  Jim Alexander

November 12
Jonathan Lunine – Cornell University
Title:  Saturn's Moon Titan From the Inside Out

November 19
Lisa Whitehead – University of Houston
Title:  Neutrino Mixing and the Daya Bay Experiment
Host:  Julia Thom-Levy
Spring 2013

January 21 – The Cooper Lecture
Robert Beichner – North Carolina State University
Title: The SCALE-UP Classroom
Host: Rob Thorne

January 28
Tim Healey – Cornell University
Title: Nonlinear Problems for Thin Elastic Structures and the Ubiquitous Isola Bifurcation
Host: Andre LeClair

February 4 – The Thomas Gold Lectures
David Jewett – UCLA
Title: Comets and the Origin and Evolution of the Solar System
Host: Jonathan Lunine

February 11
Abhay Pasupathy – Columbia University
Title: Is Magnetism Important in the Pnictide Superconductors?
Host: Séamus Davis & Dan Ralph

February 18
Jesse Thaler – MIT
Title: The Shape of Jets to Come: Boosting the Search for New Physics at the LHC
Host: Maxim Perelstein

February 25
Zahid Hasan – Princeton University
Title: Topological Surface States: Discovery and Recent Results
Host: Kyle Shen

March 4
Harold Hwang – Stanford University
Title: Emergent Phenomena at Oxide Interfaces
Host: Kyle Shen
March 11
Frank Guerts – Rice University
Title: Putting Hot Matter on a Map
Host: Peter Wittich

March 18 – Spring Break

March 25 – The Bethe Lectures
Gordon Baym – University of Illinois at Urbana-Champaign
Title: Two slit diffraction with highly charged particles: Niels Bohr's consistency argument that the electromagnetic field must be quantized.
Host: Erich Mueller

April 1
Senthil Todadri – MIT
Title: How might a Fermi surface die?
Host: Eun-Ah Kim

April 8
Shamit Kachru – Stanford University
Title: New Horizons in Black Hole Physics and Holography
Host: Liam McAllister

April 15 – The Salpeter Lecture
Eve Ostriker – University of Maryland, College Park
Title: Salpeter Lecture - Self-Regulation of Star Formation in Disk Galaxies
Host: Jonathan Lunine

April 22
Suchitra Sebastian - Cambridge University
Title: Quantum oscillations as a tool to crack the mystery of unconventional superconductivity
Host: n/a Faculty Candidate

April 29
François Bouchet - Institut d’Astrophysique de Paris
Title: Planck Main Cosmological Results
Host: Liam McAllister
Fall 2013

September 9
Eun-An Kim – Cornell University
Title: Recent Theoretical Advances in the Study of High-Tc Superconductivity using a ‘Middle-top/down’ Approach

September 16
James Lattimer – SUNY Stony Brook
Title: Measuring Neutron Stars
Host: Saul Teukolsky

September 23
Michelle Wang – Cornell University
Title: Solving Mysteries of Biology – The Power of One

September 30 – A.D. White Professor – At – Large Lectures
Nima Arkani-Hamed – IAS Princeton
Title: Space-Time, Quantum Mechanics and Scattering Amplitudes
Host: Csaba Csaki & Yuval Grossman

October 7
J.C. Seamus Davis – Cornell University
Title: How Supermassive Electrons Reveal the Magnetic Mechanism of Correlated Superconductivity

October 14 – Fall Break

October 21
Nigel Goldenfeld – University of Illinois at Urbana – Champaign
Title: Phase Transitions in Early Life: Clues from the Genetic Code
Host: Carl Franck

October 28
Zhirong Huang – Stanford University
Title: Free-Electron Lasers: from Star Wars to Molecular Movies
Host: Georg Hoffstaetter

November 4
Robert J. Lang – Lang Origami
Title: From Flapping Birds to Space Telescopes: The Mathematics of Origami
Host: Itai Cohen

November 11 – The Bethe Lectures
Fabiola Gianotti – CERN
Title: Challenges and Accomplishments of the ATLAS Experiment at the Large Hadron Collider
Host: Anders Ryd

November 18
Enectali Figueroa – MIT
Title: What’s the Matter with the Universe?
Host: Michael Niemack

**November 25**
Dam Thanh Son – University of Chicago
Title: Viscosity, Quark Gluon Plasma, and String Theory
Host: Maxim Perelstein

**December 2 – The Ralls Lecture**
Ann Nelson – University of Washington
Title: Uses of the Higgs
Host: Csaba Csaki
Spring 2014

January 27
Frans Pretorius – Princeton University
Title: Black Holes: Probes of the Cosmos and Fundamental Physics
Host: Eanna Flanagan

February 3 – The Cooper Lecture
Catherine Kallin – McMaster University
Title: Topological Superconductivity
Host: Eun-Ah Kim

February 10
Tom Kinoshita – Cornell University
Title: Tenth-Order QED Contribution to the Electron g – 2 and High Precision Test of QED and Standard Model

February 24 – The Kieval Lecture
Peter Schiffer – University of Illinois at Urbana-Champaign
Title: Frustration by Design: Artificial Spin Ice
Host: Seamus Davis

March 3
Giorgio Gratta – Stanford University
Title: The EXO Program and the Quest for Majorana Neutrino Masses
Host: Jim Alexander

March 10
Peter Galison – Harvard University
Title: Wastelands and Wilderness: Nuclear Lands
Hosts: Jim Sethna/Katheel Vogel

March 17 – The Krumhansl Lecture
Michael Devoret – Yale University
Title: Superconducting Artificial Atoms: The Quest for Unlimited Qubit Coherence
Host: Paul McEuen

March 24
Mukund Vengalattore – Cornell University
Title: Imprinting the Quantum: Measure still for Measure

March 31 – Spring Break

April 7 – The Bethe Lectures
David Awschlaom – University of Chicago
Beyond Electronics: Abandoning Perfection for Quantum Technologies
Host: Jeevak Parpia

April 14 – The Gold Lecture
J. Richard Bond – Canadian Institute for Theoretical Astrophysics
Title: Unveiling Fundamental Physics from the First Light, Revealing Simplicity & Complexity in the Universe at Large
Host: Ira Wasserman

April 21 – The Salpeter Lecture
Adam Showman – University of Arizona
Title: Weather on Remote Worlds: The Atmospheric Circulation of Exoplanets
Host: Dong Lai

April 28 – The Messenger Lecture
Lenny Susskind – Stanford University
Title: The Birth of the Universe and the Origin of Laws of Physics
Host: Paul Ginsparg

May 5
Liam McAllister & Mike Niemack – Cornell University
Title: Quantum Gravity in the Sky? CMB Measurements as a Window on Planck-Scale Physics
Fall 2014

September 8
Maxim Perelstein – Cornell University
Title: What Can We Learn from the Higgs?

September 15
Subir Sachdev – Harvard University
Title: Unveiling the Order of the High Temperature Superconductors
Host: Eun-Ah Kim

September 22 – The Bethe Lectures
Juan Maldacena – Institute for Advanced Study
Title: Quantum Mechanics and the Geometry of Spacetime
Host: Liam McAllister

September 29
Itai Cohen – Cornell University
Title: Bringing Physics into the Fold: Origami Inspired Mechanical Meta-materials

October 6
Chris Henley – Cornell University
Title: How to Trigger Left-Right Asymmetry in Organisms: Snails, Roots, and Maybe your Brain

October 13 – Fall Break

October 20
Erich Mueller – Cornell University
Title: The Search for Modulated Superconductivity

October 27
Anders Ryd – Cornell University
Title: The CMS Detector Upgrade for the High Luminosity LHC

November 3 – The Gold Lecture (CANCELLED)
Reinhard Genzel–Univ. of California Berkeley and Max Planck Institute for Extraterrestrial Physics
Title: The Galactic Center Massive Black Hole
Host: Gordon Stacey

November 10
Duncan Brown – Syracuse University
Title: Gravitational Waves: A New Frontier in 21st Century Astronomy and Astrophysics
Host: Eanna Flanagan

November 17
Raymond Ashoori – Cornell University
Title: A New Method for Electron Tunneling Spectroscopy of Semiconductors, Insulators, and Graphene
Host: Paul McEuen

November 24
Matthew Reece – Harvard University
Title: Supersymmetry After the LHC’s First Run
Host: Csaba Csaki

December 2 (CANCELLED)
Simona Murgia – UC Irvine
Title: Indirect Detection of Dark Matter with Gamma Rays: Constraints and Intriguing Hints
Host: Maxim Perelstein
Spring 2015

January 26
Lawrence Gibbons – Cornell University
Title: Taking the Muon for a Spin (in the World’s Largest Penning Trap)

February 2
John Bush – MIT
Title: Hydrodynamic Quantum Analogs: Droplets Walking on the Impossible Pilot Wave
Host: Itai Cohen

February 9
Daniel Harlow – Princeton University
Title: Black Holes, Quantum Information, and the Emergence of Spacetime
Host: Eanna Flanagan

February 16 No Colloquium – February Break

February 23 – The Salpeter Lecture
Daniel Eisenstein – Harvard
Title: A New Decade of Cosmic Structure
Host: Rachel Bean

March 2
Christopher Tully – Princeton University
Title: One Second after the Big Bang
Host: Jim Alexander

March 9
Simona Murgia – UC-Irvine
Title: Indirect Detection of Dark Matter with Gamma Rays
Host: Maxim Perelstein

March 16 – The Bethe Lectures
William Bialek – Princeton University
Title: Are Biological Networks Poised at Criticality?
Host: Sol Gruner

March 23
Brad Marston – Brown University
Title: The Quantum and Fluid Mechanics of Global Warming
Host: Cyrus Umrigar

March 30 – No Colloquium Spring Break

April 6
Dong Lai – Cornell University
Title: Astrophysics of Extreme Exoplanetary Systems
Host: Eanna Flanagan

April 13
Steve Kivelson – Stanford University
Title: High Temperature Superconductivity Near a Nematic Quantum Critical Point
Host: Eun-Ah Kim

April 20
Ian Spielman – University of Maryland and NIST
Title: Gauge Fields in Multi-level Atoms: Magnetism and Synthetic Dimensions
Host: Erich Mueller

April 27 – The Cooper Lecture
Michael Roukes – Caltech
Title: Integrated Neurophotonics: Toward Massively-Parallel Mapping of Brain Activity
Host: Jeevak Parpia

May 4 (CANCELLED)
Fall 2015

August 31
Leslie Rosenberg – University of Washington
Title: Searching for Dark-Matter Axions
Host: Lawrence Gibbons

September 7 – No Colloquium Labor Day

September 14
Chao-Lin Kuo – Stanford University
Title: The BICEP/Keck Program and the Search for Inflationary Gravitational Waves
Host: Mike Niemack

September 21
Kathryn Zurek – Lawrence Berkeley National Lab
Title: New Theories for Dark Matter: Hunting Beyond the WIMP
Host: Csaba Csaki

September 28 – The Gold Lecture
Reinhard Genzel – Univ. of California, Berkeley and Max Planck Institute
Title: The Galactic Center Massive Black Hole
Host: Gordon Stacey

October 5
Frank de Groot – Utrecht University
Title: In-situ X-ray Spectromicroscopic Experiments
Host: Ken Finkelstein

October 12 – No Colloquium Fall Break

October 19 – The Bethe Lectures
Hitoshi Murayama – UC Berkeley
Title: When a Symmetry Breaks
Host: Csaba Csaki

October 26 – The Cooper Lecture
Zhi-Xun Shen – Stanford University
Title: High Temperature Superconductivity – Insights from Einstein’s Electrons
Host: Kyle Shen

November 2 – The Krumhansl Lecture
Ana Maria Rey – JILA, NIST, and University of Colorado, Boulder
Title: Building with Crystals of Light and Quantum Matter: From Clocks to Computers
Host: Erich Mueller
November 9  
Dunghai Lee – UC Berkeley  
Title: A Novel Nematic Quantum in Iron-based Superconductor  
Host: Seamus Davis

November 16  
John Terning – UC Davis  
Title: Quantum Phase Transitions and the Higgs  
Host: Csaba Csaki

November 23  
Angela Olinto – University of Chicago  
Title: News from the Extreme Energy Cliff  
Host: Ira Wasserman

November 30 – The Kavli Lecture  
Leo Kouwenhoven – Delft  
Title: Majorana Fermions: From Particle Physics on a Chip to Topological Quantum Computing  
Host: Paul McEuen
Spring 2016

February 1
Claudia de Rham – Case Western Reserve
Title: Our Accelerating Universe and Modified Gravity
Host: Liam McAllister

February 8 – Kristin Ralls Memorial Lecture
Gabriel Orebi Gann – UC Berkeley
Title: Here Be Dragons: Mysteries of the Neutrino
Host: Peter Wittich

February 15 – No Colloquium February Break

February 22 – Parratt Lecture
R. J. Dwayne Miller – Max Planck Institute and the University of Toronto
Title: Mapping Atomic Motions with Ultrabright Electrons: The Chemists’ Gedanken Experiment Enters the Lab Frame
Host: Ritchie Patterson

February 29
André LeClair – Cornell University
Title: A New Approach towards a Proof of the Riemann Hypothesis

March 7 – Kieval Lecture
Erik Demaine – MIT
Title: Folding Paper: Visual Art Meets Mathematics
Host: Paul McEuen

March 14
Oliver Bruening – CERN
Title: The LHC and the HL-LHC Upgrade Project
Host: Ralf Eichhorn

March 21 – The Bethe Lectures
Francis Halzen – University of Wisconsin-Madison
Title: IceCube: The Discovery of High-Energy Cosmic Neutrinos
Host: Yuval Grossman

March 28 – No Colloquium Spring Break

April 4
Martin Wegener – Karlsruhe Institute of Technology
Title: Transforming and Cloaking with Metamaterials: Optics, Mechanics, and Thermodynamics
Host: Itai Cohen
April 7 – Terzian Lecture – Joint Astronomy and Physics Colloquium
Kip Thorne – Caltech
Title: Probing the Warped Side of our Universe with Gravitational Waves and Computer Simulations
Host: Saul Teukolsky

April 11
Jim Sethna – Cornell University
Title: Sloppy Models, Differential Geometry, and How Science Works

April 18 – A.D. White Professors-at-Large
Nima Arkani-Hamed – Institute for Advanced Study, Princeton, New Jersey
Title: The Future of Collider Physics, on the Earth and in the Sky
Host: Yuval Grossman

April 25 – Thomas Gold Lecture
Simon White – Max Planck Institute for Astrophysics in Garching, Germany
Title: The Planck Satellite Mission: Full Mission Results on Cosmology and Cosmic Structure Formation
Host: Ira Wasserman

May 2 – Salpeter Lecture
Fiona Harrison – Caltech
Title: A New View of the High Energy Universe: Science Highlights from the Nuclear Spectroscopic Telescope Array (NuSTAR) Mission
Host: Dong Lai

May 9
Michael Shelley – NYU
Title: Self-assembly and Collective Behavior in Active Matter Systems
Host: Itai Cohen
Fall 2016

August 29
Adam Cohen – Harvard University
Title: Bringing Bioelectricity to Light
Host: Itai Cohen

September 5 – No Colloquium Labor Day

September 12
Douglas Stone – Yale University
Title: Einstein and Quantum Mechanics: It’s Not What You Think
Host: Peter Wittich

September 19
Stephen Quake – Stanford University
Title: Single Cell Genomics
Host: Katja Nowack

September 26
Liam McAllister – Cornell University
Title: The Discrete Character of Physical Law from String Theory to the CMB

October 3
Itai Cohen – Cornell University
Title: Using a Confocal Rheoscope to Investigate Soft Squishy Materials

October 10 – No Colloquium Fall Break

October 17 – Parratt Lecture
John Rogers – Northwestern University
Title: Soft, Biocompatible Optoelectronic Interfaces to the Brain
Host: Itai Cohen

October 24
Hidenori Takagi – Max Planck Institute for Solid State Research and Department of Physics, Univ. of Tokyo
Title: Spin-orbit Coupling meets with Electron Correlations – A Guided Tour to Exotic Electronic States of 5d Transition Metal Oxides
Host: Kyle Shen

October 31
Carl Haber – Lawrence Berkeley National Lab
Title: The Restoration of Early Sound Recordings using Optical Scanning and Image Analysis
Host: Peter Wittich

November 7 – Kristin Ralls Memorial Lecture
Anette Hosoi – MIT
Title: Marine Mammals and Fluid Rectifiers: The Hydrodynamics of Hairy Surfaces
Host: Itai Cohen
November 14
Dimitri Basov – Columbia University
Title: Quantum Materials: Insights from Near Field Nano-Optics
Host: Kyle Shen

November 21
Herbert Dreiner – Universität Bonn
Title: The Bonn Physics Show—By Students for Kids, an Exciting Outreach and Education Project
Host: Csaba Csaki

November 28 – The Bethe Lectures
Anton Zeilinger – University of Vienna
Title: Quantum Communication with Entangled Photons
Host: David Mermin