

Mark Joseph Oreglia

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Birth and Nationality

26 June 1953, Redwood City, CA
United States citizen

Education

Stanford University, Ph.D. in Physics, 1981
Stanford University, M.S. in Physics, 1975
Stanford University, B.S. in Physics, 1974

Appointments

Professor, University of Chicago, 2001-present
Associate Professor, University of Chicago, 1991-2001
Assistant Professor, University of Chicago, 1984-91
Research Associate, University of Chicago, 1983-84
Enrico Fermi Fellow, University of Chicago, 1981-83
Research Associate, SLAC, Stanford University, 1981

Administrative Appointments

Deputy Dean for PSD Infrastructure 2021-present
Director, PSD Masters Program 2019-present
Chair, College Curriculum Committee 2017-present
Chair, College Disciplinary Committee 2017-present
ATLAS Tile Speakers Committee 2016-present
USATLAS Level-2 Construction Manager for TileCal Upgrades 2015-present
ATLAS Tile Upgrade Coordination Group, 2015-present
USATLAS Level-2 R&D Manager for TileCal Upgrades, 2012-2015

ATLAS Experiment Manager for Tile Upgrades, 2012-2015
ATLAS Speakers Committee, 2011-2014
Acting Director, The Enrico Fermi Institute, 2009-2011
Physical Sciences Collegiate Division Governing Committee (U Chgo.) 2004-present
Co-chair, American Linear Collider Physics/Detector Group, 2002-2010
LEP Photonic Higgs Working Group Convenor, 2000-2002
GLAST Facility Science Team (NASA), 1998-99
Chair, Council on Teaching (U. Chgo), 1997-99, 2007-8, 2016-
GLAST Instrument Detector Steering Ctte, 1996, 98-99
Experimental Physics Advisory Ctte, SLAC, 1995-1997
Chair, BaBar Calorimetry Review Ctte, SLAC, 1995
Council for Research (U. Chgo), 1992-95
Steering Ctte., SLAC/PEP-II Experiment, 1994
Physical Sciences Governing Ctte. (U. Chgo) 1991-94

Elected Positions

College Council, 1987-89, 91-94, 2001-3, 2006-8, 2012-2017
Council of the University Senate, 2005-8, 2012-2015
Spokesman of the College Council, 1992-94, 2002-3
Physical Sciences Divisional Policy Ctte., 1994-95

Honors and Awards

Fellow of the American Physical Society, 2018
Don York Faculty Initiative Award (Neighborhood Schools Programs), 2014
Quantrell Award (Excellence in Teaching), 2001
Alfred P. Sloan Foundation Research Fellow, 1986
Presidential Young Investigator, 1985
A. H. Compton Lecturer, University of Chicago, 1983
Enrico Fermi Fellow, University of Chicago, 1981-83
Phi Beta Kappa, Stanford University, 1974

Graduate Students

Kevin Hildebrand, current, ATLAS Experiment.
Sam Meehan, PhD 2015, ATLAS Experiment, now postdoc at U Washington.
Chris Meyer, PhD 2014, ATLAS Experiment, now postdoc at U Pennsylvania.
Pedro Amaral, PhD 2003, OPAL Experiment, now in private industry (medical physics).
Andy Hocker, PhD 2000, OPAL Experiment, now Scientist at FNAL.

Steven Gensler, PhD 1996, OPAL Experiment, now Director of Engineering, Nanosys.

Current (and some past) Research

The ATLAS Experiment

This is my primary activity. In 2008 the Large Hadron Collider at CERN embarked on the highest center-of-mass hadron collisions ever. This machine carries on where LEP and the Fermilab Tevatron leave off. LEP-2 ended its program with a hint of a Higgs signal at the mass 115 GeV. The ATLAS detector at the LHC discovered a Higgs-like boson at 126 GeV and is now studying its properties. I am currently working on the search for exotic Higgs bosons and also working on refinements in jet definition and energy measurement.

After 2026 the LHC will operate at approximately five times the current intensity, leading to higher demands on the ATLAS trigger and electronics. This requires redesign of the Tile calorimeter electronics, both to send data out at a higher bandwidth, and also the electronics must have a higher tolerance to ambient radiation in the ATLAS cavern. Since 2012 I have been a leader in the Tile calorimeter upgrade R&D. I was co-leader of all the upgrade activities until 2015, when I became the Level-2 manager for both the US-Tile activity and also an ATLAS Tile Level-2 manager. I authored the 2015 Tile Scoping Document and was a lead editor of the 2018 Technical Design Report. Currently I am leading the effort to design and prototype new front-end boards for the Tile Upgrade.

The International Linear Collider (2002-2012)

I co-chaired the American LC Physics and Detector Group, I sat on the LC Steering Group of the Americas and the World-Wide Study of Physics and Detectors for LC. I was a member of the International Linear Collider committee on LC scope definition and the WWS editorial team for the Physics Detector Concept Report. I have co-organized the ALCPG Workshops held annually and also the LCWS international ILC workshops. My specific technical interest on ILC concerns the design of calorimeters optimized for particle flow algorithms. I was editor of the SID (Silicon Detector) R&D proposal.

University Leadership and Public Outreach Activities

I have had a long role in the structure of University research and the College through my tenures on the Council of the University Senate, the Provost's Council on Research (chair), the College Council (spokesperson), and the Physical Sciences Governing Committee. In 2006 I established the Enrico Fermi Interns Program, a summer program for 7th-graders in the Chicago Public Schools. This program brings students to the University for lectures on science and activities in the laboratory; in 2014 I won the York Faculty Initiative prize for this program. I work with the Chicago Council on Science and Technology to bring an appreciation of science to the general public through public lectures, panels, and blog posts. I also work with the Chicago-based 137 Films. I helped create their film "The Atom

Smashers”, in which I have a minor role. At the Chicago premier of the film I participated on an audience Q&A panel to an audience of 500. I also answered audience questions at the premier of another of their award-winning films, ”The Believers”, at the Chicago Film Festival. In 2013 I helped create and participated in the panel for ”Critical Mass: How the Discovery of the Higgs Bosons Swept the World”. This event, at UChicago’s Logan center, was a full-house during a blizzard!

Publications

Selected Publications (contributed significantly)

- [1] Y. Chan *et al.*, DESIGN AND PERFORMANCE OF A MODULARIZED NAI(TL) DETECTOR (THE CRYSTAL BALL PROTOTYPE). (TALK), IEEE Trans. Nucl. Sci. **25**, 333 (1978).
- [2] R. Partridge *et al.*, The Decay $J/\psi \rightarrow 3\gamma$ and a Search for the η_c , Phys. Rev. Lett. **44**, 712 (1980).
- [3] M. Oreglia *et al.*, Measurement of the Decays $\psi' \rightarrow \eta J/\psi$ and $\psi' \rightarrow \pi^0 J/\psi$, Phys. Rev. Lett. **45**, 959 (1980).
- [4] R. Partridge *et al.*, Observation of an eta(c) Candidate State with Mass 2978-MeV +- 9-MeV, Phys. Rev. Lett. **45**, 1150 (1980).
- [5] M. Oreglia, *A Study of the Reactions $\psi' \rightarrow \gamma\gamma\psi$* , PhD thesis, SLAC, 1980.
- [6] Crystal Ball, M. Oreglia *et al.*, Charmonium Studies With the Crystal Ball, in *ELECTROWEAK INTERACTIONS AND UNIFIED THEORIES. PROCEEDINGS, 15TH RENCONTRES DE MORIOND, LES ARCS, FRANCE, MARCH 9-21, 1980. VOL. 2*, pp. 69–82, 1980.
- [7] R. Partridge *et al.*, Measurement of Inclusive η Production in e^+e^- Interactions Near Charm Threshold, Phys. Rev. Lett. **47**, 760 (1981).
- [8] C. Edwards *et al.*, Observation of an eta(c)-prime Candidate State with Mass 3592-MeV +- 5-MeV, Phys. Rev. Lett. **48**, 70 (1982).
- [9] C. Edwards *et al.*, Observation of an eta eta Resonance in J/psi Radiative Decays, Phys. Rev. Lett. **48**, 458 (1982).
- [10] M. Oreglia *et al.*, A Study of the Reaction $\psi\text{-prime} \rightarrow \gamma\gamma J/\psi$, Phys. Rev. **D25**, 2259 (1982).
- [11] C. Edwards *et al.*, Upper Limit for $J/\psi \rightarrow \gamma$ Axion, Phys. Rev. Lett. **48**, 903 (1982).
- [12] C. Edwards *et al.*, Production of $\pi^0\pi^0$ and $\pi^0\eta$ in Photon - Photon Collisions, Phys. Lett. **B110**, 82 (1982).

- [13] D. Garfinkle *et al.*, RESULTS FROM THE CCFR NEUTRINO OSCILLATION EXPERIMENT, in *Dynamics and spectroscopy at high-energy: Proceedings, 11th SLAC summer institute on particle physics (SSI 83), Stanford, Calif., 18-29 Jul 1983*, 1983.
- [14] I. E. Stockdale *et al.*, Limits on Muon Neutrino Oscillations in the Mass Range $55\text{-eV}^2 \leq \Delta m^2 \leq 800\text{-eV}^2$, *Phys. Rev. Lett.* **52**, 1384 (1984).
- [15] I. E. Stockdale *et al.*, Search for ν_μ and $\bar{\nu}$ Oscillations in the Mass Range $15\text{-eV}^2/c^4 < \delta M^2 < 1000\text{-eV}^2/c^4$, *Z. Phys.* **C27**, 53 (1985), [Conf. Proc.C841031,258(1984)].
- [16] F. S. Merritt *et al.*, Hadron Shower Punchthrough for Incident Hadrons of Momentum $15\text{-GeV}/c$, $25\text{-GeV}/c$, $50\text{-GeV}/c$, $100\text{-GeV}/c$, $200\text{-GeV}/c$, and $300\text{-GeV}/c$, *Nucl. Instrum. Meth.* **A245**, 27 (1986).
- [17] J. Gaiser *et al.*, Charmonium Spectroscopy from Inclusive ψ -prime and J/ψ Radiative Decays, *Phys. Rev.* **D34**, 711 (1986).
- [18] K. Lang *et al.*, Neutrino Production of Dimuons, *Z. Phys.* **C33**, 483 (1987).
- [19] J.-G. An *et al.*, Influence of Gas Mixture and Primary Ionization on the Performance of Limited Streamer Mode Tubes, *Nucl. Instrum. Meth.* **A267**, 386 (1988).
- [20] J.-G. An *et al.*, A Study of the Selfquenched Streamer Mode Using a Nitrogen Laser, *Nucl. Instrum. Meth.* **A267**, 396 (1988).
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- [31] P. S. Auchincloss *et al.*, Measurement of the Inclusive Charged Current Cross-section for Neutrino and Anti-neutrino Scattering on Isoscalar Nucleons, Z. Phys. **C48**, 411 (1990).
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