Stanford

Helen Quinn

Professor of Particle Physics and Astrophysics, Emerita

SLAC National Accelerator Laboratory

Bio

BIO

Helen Quinn received her Ph.D in physics at Stanford in 1967. She has taught physics at both Harvard and Stanford. Dr. Quinn work as a particle physicist has been honored by the Dirac Medal (from the International Center for Theoretical Physics, Italy) and the Klein Medal (from The Swedish National Academy of Sciences and Stockholm University) as well as the Sakurai Prize (from the American Physical Society), the Compton medal (from the American Institute of Physics, awarded once every 4 years) and the 2018 Benjamin Franklin Medal for Physics (from the Franklin Institute). She is a member of the American Academy of Arts and Sciences, the National Academy of Science and the American Philosophical Society. She is a Fellow and former president of the American Physical Society. She is originally from Australia and is an Honorary Officer of the Order of Australia.

Dr. Quinn has been active in science education for some years, and since her retirement in 2010 this has been her major activity. She was a founding member of the Contemporary Physics Education Project (CPEP) which produced a well-known standard-model poster for schools in 1987 (see photo). She served as Chair of the US National Academy of Sciences Board on Science Education (BOSE) from 2009-2014. She was as a member of the BOSE study committee that developed the report “Taking Science to School” and chaired the committee for the “Framework for K-12 Science Education”, which is the basis of the Next Generation Science Standards (NGSS) and similar standards now adopted by about 30 states in the US, and has been influential internationally as well. She also contributed to follow-up NRC studies on assessment and implementation of NGSS. From 2015-2018 Helen served at the request of the President of Ecuador as a member of the “Comision Gestora” to help plan and guide the initial development of the National University of Education of Ecuador.

ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, SLAC National Accelerator Laboratory

HONORS AND AWARDS

- Benjamin Franklin Medal in Physics, Franklin Institute, Philadelphia (2018)
- Compton Medal, American Institute of Physics (2016)
- Sakurai Prize, American Physical Society (2013)
- Klein Medal, University of Stockholm and Swedish Academy of Sciences (2008)
- Dirac Medal, International Center for Theoretical Physics (2000)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Comision Gestora, National University of Education, Ecuador (2015 - 2018)
- Chair, Board on Science Education NRC (2009 - 2014)
- Member, Board on Science Education NRC (2005 - 2009)

- President, American Physical Society (2004 - 2004)
- Founding President, Contemporary Physics Education Project (1988 - 1998)

PROFESSIONAL EDUCATION

- PhD, Stanford University , Theoretical Physics (1967)
- MS, Stanford University , Physics (1964)
- BA, Stanford University , Physics (1963)

Publications

PUBLICATIONS

- **Science and Language for English Language Learners in Relation to Next Generation Science Standards and with Implications for Common Core State Standards for English Language Arts and Mathematics** *EDUCATIONAL RESEARCHER*
  Lee, O., Quinn, H., Valdes, G.
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- **How the cosmos was conquered** *NEW SCIENTIST*
  Quinn, H., Nir, Y.
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- **Heavy-flavor physics** *2002 EUROPEAN SCHOOL OF HIGH-ENERGY PHYSICS, PROCEEDINGS*
  Quinn, H.
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- **Comment on extracting alpha from B ->rho rho** *PHYSICAL REVIEW D*
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- **SU(3) relations and the CP asymmetries in B decays to eta K-'(S), phi K-S, and K+K-KS** *PHYSICAL REVIEW D*
  Grossman, Y., Ligeti, Z., Nir, Y., Quinn, H.
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- **Summary and outlook for KEKTC5** *5th KEK Topical Conference on Frontiers in Flavor Physics*
  Quinn, H.
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- **The symmetry, or lack of it, between matter and antimatter** *INTERNATIONAL JOURNAL OF MODERN PHYSICS A*
  Quinn, H. R.
  2002; 17: 137-156
- **B physics and CP violation** *2001 SUMMER SCHOOL ON PARTICLE PHYSICS*
  Quinn, H.
  2002; 10: 1-?
- **Summary and outlook for 9th International Symposium on Heavy Flavor Physics** *HEAVY FLAVOR PHYSICS*
  Quinn, H. R.
  2002; 618: 470-477
- **CP violation in B physics - What have we learned, and what comes next?** *International Conference on CP Violation Physics*
  Quinn, H. R.
  ELSEVIER SCIENCE BV.2001: 159–165
- **Using kaon regeneration to probe the quark mixing parameter cos2 beta in B ->psi K decays** *PHYSICAL REVIEW LETTERS*
  Quinn, H. R., Schietinger, T., Silva, J. P., Snyder, A. E.
  2000; 85 (25): 5284-5287
- **Use of early data on B -> rho pi decays** *PHYSICAL REVIEW D*

Quinn, H. R., Silva, J. P.
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- **CP and T violations: new results leave open questions** *PHYSICS WORLD*
  Quinn, H., Hewett, J.
  1999; 12 (5): 37-42
- **Bounding the effect of penguin diagrams in a(CP)(B-0 ->pi(+)pi(-))** *PHYSICAL REVIEW D*
  Grossman, Y., Quinn, H. R.
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- **Removing discrete ambiguities in CP asymmetry measurements** *PHYSICAL REVIEW D*
  Grossman, Y., Quinn, H. R.
  1997; 56 (11): 7259-7266
- **CP violation** *Conference on Production and Decay of Hyperons, Charm and Beauty Hadrons*
  Quinn, H.
  ELSEVIER SCIENCE BV.1996: 17–23
- **CP VIOLATION IN B-DECAYS** *NUCLEAR PHYSICS B*
  Quinn, H. R.
  1994: 21-28
- **MEASURING CP ASYMMETRY IN B-]RHO-PI-DECAYS WITHOUT AMBIGUITIES** *PHYSICAL REVIEW D*
  Snyder, A. E., Quinn, H. R.
  1993; 48 (5): 2139-2144
- **TOPICS IN CP VIOLATION** *ANNALS OF THE NEW YORK ACADEMY OF SCIENCES*
  Quinn, H. R.
  1993; 688: 11-18
- **CP VIOLATION IN B-PHYSICS** *ANNUAL REVIEW OF NUCLEAR AND PARTICLE SCIENCE*
  Nir, Y., Quinn, H. R.
  1992; 42: 211-250
- **PENGUIN TRAPPING WITH ISOSPIN ANALYSIS AND CP ASYMMETRIES IN B-DECAYS** *PHYSICAL REVIEW D*
  Lipkin, H. J., Nir, Y., Quinn, H. R., Snyder, A. E.
  1991; 44 (5): 1454-1460
- **MEASURING CABIBBO-KOBAYASHI-MASKAWA PARAMETERS WITH CP ASYMMETRY AND ISOSPIN ANALYSIS IN B-PI-K** *PHYSICAL REVIEW LETTERS*
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  1991; 67 (5): 541-544
- **HOW TO EXTRACT CP-VIOLATING ASYMMETRIES FROM ANGULAR-CORRELATIONS** *PHYSICAL REVIEW D*
  Dunietz, I., Quinn, H., Snyder, A., Toki, W., Lipkin, H. J.
  1991; 43 (7): 2193-2208
- **LEARNING ABOUT THE CABIBBO-KOBAYASHI-MASKAWA MATRIX FROM CP ASYMMETRIES IN B0 DECAYS** *PHYSICAL REVIEW D*
  Nir, Y., Quinn, H. R.
  1990; 42 (5): 1473-1476
- **OPERATOR RENORMALIZATION-GROUP** *PHYSICAL REVIEW D*
  Horn, D., Langeveld, W. G., Quinn, H. R., WEINSTEIN, M.
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- **NEW FORMULATION FOR THE LATTICE-FERMION DERIVATIVE - LOCALITY AND CHIRALITY WITHOUT SPECTRUM DOUBLING** *PHYSICAL REVIEW LETTERS*
  Quinn, H. R., WEINSTEIN, M.
  1986; 57 (21): 2617-2620

- **LATTICE THEORIES OF CHIRAL FERMIONS** *PHYSICAL REVIEW D*
  Quinn, H. R., WEINSTEIN, M.
  1986; 34 (8): 2440-2456
- **NONPERTURBATIVE EFFECTS IN EQUILIBRIUM FINITE-TEMPERATURE SCALAR FIELD-THEORY** *PHYSICAL REVIEW D*
  Aoyama, H., Quinn, H. R.
  1985; 31 (4): 885-899
- **MODELS WHICH ALLOW A NEW INFLATIONARY UNIVERSE HISTORY** *PHYSICAL REVIEW D*
  Gupta, S., Quinn, H. R.
  1984; 29 (12): 2791-2797
- **COMPOSITE MODELS OF QUARKS AND LEPTONS AND STRONG-COUPLING LATTICE GAUGE-THEORIES** *PHYSICAL REVIEW D*
  Quinn, H. R., Drell, S. D., Gupta, S.
  1982; 26 (12): 3689-3700
- **HEAVY QUARKS AND PERTURBATIVE QUANTUM-CHROMODYNAMIC CALCULATIONS** *PHYSICAL REVIEW D*
  Gupta, S., Quinn, H. R.
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- **OPERATOR-PRODUCT EXPANSION AND VACUUM INSTABILITY** *PHYSICAL REVIEW D*
  Gupta, S., Quinn, H. R.
  1982; 26 (2): 499-504
- **EXACT REAL-SPACE RENORMALIZATION-GROUP AND NEW TRUNCATION ALGORITHMS FOR LATTICE THEORIES** *PHYSICAL REVIEW D*
  Quinn, H. R., WEINSTEIN, M.
  1982; 25 (6): 1661-1680
- **WHAT IS HAPPENING IN PARTICLE PHYSICS THEORY - A REVIEW TALK FOR NON-PARTICLE PHYSICISTS** *AUSTRALIAN JOURNAL OF PHYSICS*
  Quinn, H. R.
  1980; 33 (5): 789-799
- **DYNAMICAL BREAKING OF CHIRAL SYMMETRY IN LATTICE GAUGE-THEORIES** *PHYSICAL REVIEW D*
  Svetitsky, B., Drell, S. D., Quinn, H. R., WEINSTEIN, M.
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  WEINSTEIN, M., Drell, S. D., Quinn, H. R., Svetitsky, B.
  1980; 22 (5): 1190-1197
- **QUANTUM ELECTRODYNAMICS ON A LATTICE - HAMILTONIAN VARIATIONAL APPROACH TO THE PHYSICS OF THE WEAK-COUPLING REGION** *PHYSICAL REVIEW D*
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- **MULTIPLE VACUUMS IN A LATTICE FORMULATION OF 2-DIMENSIONAL ABELIAN HIGGS MODEL** *PHYSICAL REVIEW D*
  Quinn, H. R., WEINSTEIN, M.
  1978; 17 (4): 1063-1072
- **CP CONSERVATION IN PRESENCE OF PSEUDO-PARTICLES** *PHYSICAL REVIEW LETTERS*
  Peccei, R. D., Quinn, H. R.
  1977; 38 (25): 1440-1443
- **SOME ASPECTS OF INSTANTONS** *NUOVO CIMENTO DELLA SOCIETA ITALIANA DI FISICA A-NUCLEI PARTICLES AND FIELDS*
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