

Curriculum Vitae and Faculty Update 2016

Name: Thomas F. Walsh
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Expertise: Phenomenology of quantum chromodynamics, lattice gauge theory, astroparticle physics

CURRICULUM VITAE

Born February 27, 1941 in Pasadena, California. BA University of California at Berkeley, 1962. Ph.D. University of California at Berkeley 1967. Research Associate, University of Minnesota 1967-69, Research Associate and Staff, Deutsches Elektronen Synchrotron, 1969-1980, Professor, University of Wuppertal, 1979-1980, Visting Scientist, CERN, 1980-81, Head, Theory Division, Deutsches Elektronen Synchrotron, 1981-1983, Professor of Physics, University of Minnesota 1983-present, Scientific Director, Minnesota Supercomputer Institute 1985-1987. George Taylor Service Award, University of Minnesota, 1987.

STATEMENT OF ACCOMPLISHMENTS

Started the electron-photon structure function program, pursued theoretically and experimentally at DESY and elsewhere, introduced the pointlike component of the photon structure function, introduced the idea of gluon jets in quarkonium decay and made quantitative predictions of gluon jet production in electron-positron production. This work was the quantitative theoretical basis for the DESY discovery of the gluon in 1979. One of the originators of multijet models in QCD. Did early work on cosmic monopoles and strings. Was founding scientific director and initial head of the Minnesota Supercomputer Institute. Investigated dynamical fermions in lattice QCD.

PRINCIPAL CONTRIBUTIONS TO PHYSICS

- 1971 T.F. Walsh, "Inelastic Electron-Photon Scattering", Phys. Lett 36B (1971)121
- 1973 T.F.Walsh, P.M. Zerwas, "Two Photon Processes in the Parton Model", Phys. Lett. 443 (1973) 195
- 1977 K. Koller, T.F. Walsh, "Three Gluon Jets as a Test of QCD", Phys. Lett. 72B (1977) 47
- 1978 P. Hoyer, P. Osland, H.G. Sander, T.F. Walsh, P.M. Zerwas, "Quantum Chromodynamics and Jets in Electron Positron Annihilation", Nucl. Phys. B161 (1979) 349.

- 1989 G. Lazarides, Q. Shafi, T.F. Walsh, "Cosmic Strings and Domains in Unified Theories", Nucl. Phys. B195 (1982)

FIVE MOST RECENT PUBLICATIONS

- 1994 J. Ohnemus, S. Rudaz, T.F. Walsh, P.M. Zerwas, "Single leptoquark production at hadron colliders", Phys. Lett. B334 (1994) 203
- 1994 J. Ohnemus, T.F. Walsh, P.M. Zerwas, "Gamma Gamma Production of Nonstrongly Interacting SUSY Particles at Hadron Colliders", Phys. Lett. B328 (1994) 369
- 1994 K.D. Born, E. Laerman, T.F. Walsh, P.M. Zerwas, "Spin Dependence of the Heavy Quark Potential", Phys. Lett. B329 (1994) 332
- 1994 K.D. Born, E. Laermann, T.F. Walsh, P.M. Zerwas, "The Interquark Potential: A Lattice QCD Analysis", Phys. Lett. B329 (1994) 325
- 1989 K.D. Born, E. Laermann, N. Pirch, T.F. Walsh, P.M. Zerwas, "Hadron Properties in Lattice QCD with Dynamical Fermions" Phys. Rev. D40 (1989) 1653

SYNERGISTIC ACTIVITIES

Main contributor to collaboration of the theory program of the Nils Bohr Institute and DESY, 1981-83, We hoped for more, but I left. Ran two workshops with Keith Olive and Serge Rudaz at the University of Minnesota.

Served on various DOE HEP review panels.

Founding scientific director, Minnesota Supercomputer Institute and ran the operation until 1987. Installed with colleagues the first campus wide local area network connected to the supercomputer institute and the national net, 1985-87.

CURRENT AND PENDING SUPPORT

None.

PH.D.'s OVER LAST DECADE

None

FACULTY UPDATE

I am currently on phased retirement and am developing a series of books on the decline of fossil carbon energy and the nature of the replacement energy sources we will need. The second edition of the first book "America 2100: After Fossil Carbon" is now on the Apple iBook site and a print version is available on amazon.com.

The development of the first book was part of a revision I did of Physics 1001 on Energy and the Environment.

The books on replacement energy are intended to be a community service that should become relevant over the next five years. There is a website, "america2100.net" which now contains the original book and also the first three of the series books, "The Rise and Fall of Fossil Carbon, "The Replacement Energy Problem" and "Grand Projects 1; Rail and Road". The next is to be "Nuclear Fission Energy".

These books are short, at most 100 pages, and are in two parts. The main book will, I hope, be easy for a general public to read. This will be linked to endnotes that form a second and more technical book that can be read independently. They form a "frontbook" and a "backbook".

I am now committed to teaching Physics 1202 in Spring 2016 and 2017, which involved developing some new material on elementary physics with applications to biology.