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Curriculum Vitae

Name:	Dr Franz **Muheim**
Date of birth:	January 12, 1960
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Education:

1980 - 1985:	Studying Physics at the Swiss Federal Institute of Technology Zurich.
1985:	ETH Zurich, Diploma (master degree).
1986 - 1990:	Graduate Student at the University of Zurich (Prof. R. Engfer).
1990:	University of Zurich, Ph.D. (Dr. phil. II).

Positions:

2006 -	Professor	University of Edinburgh.
2003 - 2006:	Reader	University of Edinburgh.
1999 - 2003:	Lecturer	University of Edinburgh.
1995 - 1998:	Maître-assistant	Université de Genève.
1992 - 1994:	Research Associate	Syracuse University.
1991:	Postdoktorand	Universität Zürich.
1986 - 1991:	Assistent	Universität Zürich.

Personal Information:

Since 1988 married to Ruth née Keller. One daughter, Andrea Naomi.

Languages: German (mother tongue), English (very good), French (very good).

Research Interests and Experience:

Over the last thirty years dramatic progress has been made in particle physics. We know now that the basic constituents of matter are leptons and quarks which interact via the electromagnetic, strong and weak forces through the exchange of virtual gauge bosons. The electromagnetic and the weak force have been unified into an electroweak interaction. The "Standard Model" of particle physics is a hugely successful quantum field theory which was tested by many experimental measurements. If you allow for non-zero neutrino masses, the predictions of have always been correct, The Standard Model is cleary one of the scientific successes of the 20th century. Today, we have precisely measured many of the Standard Model parameters. However there are outstanding questions in particle physics:

- In the Standard Model, the mass of the quarks and leptons is generated by the Higgs mechanism. The mass of each quark and lepton is given by its coupling to the Higgs boson field. These couplings are not predicted by the theory which raises the following questions: Why does the Standard Model have so many free parameters? Is there a more fundamental theory which can explain why there are three generations of quarks and leptons and which is able to predict the masses and the couplings of these particles and why neutrinos have such a tiny mass. We also do not understand the role of gravity or if space does have extra dimensions. What are the origins of the fundamental forces, and how can these be unified?

- In the Big Bang model of the universe matter and antimatter were created in equal amounts. If baryon number were conserved we would expect that all matter would have annihilated with antimatter into photons; and the universe of today would look rather uninteresting. All that would remain are the cosmic microwave background photons. No matter would survive and hence no life to observe this radiation. There are three conditions necessary for our universe to exist: The product of the symmetries of charge conjugation, C, and parity, P, must be violated in particle reactions that have occurred very shortly after the Big Bang. Baryon number violating processes must exist, but so far we have not observed proton decay. In addition, there must be a period in which there was no thermal equilibrium (inflation). Indeed, CP violation has been observed in the decay of neutral kaons and B mesons. However, we do not understand the origin of the CP violation, and additional sources of CP violation are required to generate the observed matter-antimatter asymmetry in the universe.

- There are additional close links between cosmology and particle physics. Despite strong evidence from the rotational speed of stars in galaxies, we do not know what dark matter is made of. Many searches are ongoing and dark matter particle should be light enough to be produced and studied at the next generation of accelerators. The latest experiments in Astrophysics (Hubble constant, WMAP, galactic structure) have altered dramatically our understanding of cosmology. The data now prefer a flat universe with a large cosmological constant or dark energy which accelerates the expansion of the universe. We do not understand the nature of this dark energy, but it might be related to the Higgs field. The answer to this puzzle could well come from particle physics.

For a considerable time my focus has been to shed light on the puzzle of CP violation. For three generations of quarks, the Cabibbo-Kobayashi-Maskawa (CKM) matrix describes the flavour changing quark couplings mediated by the weak interaction. The CKM matrix has an imaginary phase which allows for CP violation to occur in the Standard Model. This is described by unitarity triangles in the complex plane. The length of the sides of the triangles are experimentally accessible via the magnitudes of CKM matrix elements (V_{cb}, V_{ub}, and V_{td}) and the CP angles (α, β, γ and χ) are observable as CP violating asymmetries, respectively.

LHCb Experiment at the Large Hadron Collider (LHC), CERN, Geneva (since 1999):

When starting my lectureship at Edinburgh in 1999, I initiated a new programme to study CP violation at the Large Hadron Collider (LHC) to make use of the much larger production rates of B and B_s mesons that are available at a hadron collider. Under my leadership, the Edinburgh Particle Physics Experiment (PPE) group joined the LHCb experiment, a dedicated apparatus to study CP violation and rare decays. The LHC will start operating in 2007.

The LHCb experiment will allow us to ultimately test if the Standard model is the only source of CP violation in quark transitions. New Physics could generate additional CP violating phases through loop and box diagrams, e.g. in $b \to s$ penguin transitions or B_s mixing. With data collected by the LHCb experiment, my plans are:

- to exploit of the availability of B_s mesons. The analysis of the decays $B_s \to D_s^{\pm} K^{\mp}$, $B_s \to J/\psi\phi$ and $B_s \to D_s^{+}\ell^{-}\bar{\nu}_{\ell}X$ will allow me to measure the CP angles γ and χ, the B_s lifetime difference $\Delta\Gamma_s$, and the B_s mass difference Δm_s without theoretical uncertainties.

- to make very precise measurements of the CP violating angles χ, γ, α and β that are required to overconstrain the unitarity triangles. The strategy is to compare B and B_s meson decay modes with identical weak phases, but different decay topologies, e.g. in $B_s \to \phi\phi$ which is a $b \to s$ penguin transition compared to the tree diagram decay $B_s \to J/\psi\phi$, or $B_d \to \phi K_S$ versus $B_d \to J/\psi K_S$, or to compare the apex of the unitarity triangle measured with the CKM matrix element V_{ub} and γ from $B \to D_{\mathrm{CP}}K$ with the $\sin 2\beta$ measurement arising through CP violation in $B_d\bar{B}_d$ mixing and decay of $B_d \to J/\psi K_S$. Here D_{CP} is a D meson decaying to a CP eigenstate,

- I am also interested in searches for New Physics in measurements of the rare decays $B_s \to \mu^+\mu^-$, $B_s \to \phi\gamma$ and $B \to K^*\mu^+\mu^-$ and $B_s \to \phi\mu^+\mu^-$ which arise through flavour changing neutral currents mediated by loop diagrams.

Over the last years my research in LHCb has focused on the design and development of photo detectors for measuring Cherenkov light and on the construction of the LHCb detector. To measure CP violating asymmetries, it is crucial to have excellent charged particle identification. The CP violating decays, e.g. $B_s \to D_s^{\pm} K^{\mp}$, need to be separated from the more copiously produced background decays, e.g. $B_s \to D_s^{\pm}\pi^{\mp}$. The required performance can only be achieved with Ring Imaging Cherenkov (RICH) detectors.

The construction of the LHCb RICH detectors will finish early next year. I am project leader for the production and testing of the RICH photo detector. Dedicated photo detector fest facilities have been set up to measure the properties of all LHCb RICH photo detectors, comprising about 0.5 million electronic read-out channels. The Edinburgh PPE group was the main contributor to the design and the assembly of the two photo detector test facilities that have been built and commissioned at Edinburgh and Glasgow. Production and testing of the RICH photo detectors started in Oct 2005 and will continue until spring 2007. These facilities also provide great training opportunities for postgraduate and undergraduate students here at Edinburgh.

As coordinator of the RICH MaPMT group I lead the effort for the development of the multianode photo multiplier tubes (MaPMT), and their read-out electronics. These were one of the options for the LHCb RICH photo detectors. We built a laboratory at Edinburgh to measure the properties and the performance of these devices. We have tested MaPMTs in the laboratory set-up at Edinburgh and with particle beams at CERN. We successfully demonstrated that MaPMTs fulfil the RICH photo detector requirements. This work allowed the LHCb experiment to take the decision on the final photo detector technology.

I am also heavily involved in the optimisation of the LHCb detectors. Currently the PPE group is working on the preparation for the LHCb physics by analysing simulated data samples of the decay modes $B_s \to J/\psi\phi$, $B_d \to \phi K_S$, $B_s \to D_s^+\ell^-\bar{\nu}_\ell X$ and $B_s \to \phi\phi$ which is a $b \to s$ penguin transition. For example we are estimating the sensitivity for the weak phase ϕ_s which in the Standard Modell is predicted to be equal to $-2\chi = -0.04$. This quantity could be much larger if there is New Physics. We have also studied the feasibility of measuring the lifetime difference $\Delta\Gamma_s$ of the heavy and light B_s^0 meson. In addition, we contributed to improvements in the vertexing and flavour tagging of the spectrometer.

Particle physics also drives the development of solutions to today's most challenging scientific computing problems. I am involved in the testing of new approaches (e-Science) which will enable the distributed generation and handling of the vast amounts of data that will be produced data at the LHC (LHC DataGrid, ScotGrid). At Edinburgh we are also working on the development and implementation of the conditions database for the LHCb experiment which will store the environmental status of the detector and alignment constants. This work is vital to enable smooth data taking and physics analysis when the LHCb experiment will start in 2007.

BABAR **experiment at PEP II, SLAC, Stanford (Since 1999):**

I am currently a member of the BABAR collaboration. The BABAR detector is operating at the PEP II electron-positron collider, a B meson factory at the Stanford Linear Accelerator Center, SLAC. The BABAR experiment has started taking data in 1999 and, as of today, has accumulated a sample of over 400 million B meson decays. We have achieved our first goal and have made the first observation of CP violation in B decays, a measurement of the CP angle $\sin 2\beta$. We will continue to improve on the precision of the $\sin 2\beta$ measurement and attempt to measure the CP angles γ and α. We are also making precise measurements of radiative Penguin decays $B \to X_{s,d}\gamma$ and have recently observed the electroweak Penguin decays $B \to X_s\ell^+\ell^-$. The BABAR detector is also well suited to make precision measurements of the CKM matrix elements V_{ub}, V_{cb}, and V_{td}. These measurements can be checked for consistency with the Standard Model predictions for the CP angles and will further our understanding of CP violation.

My main current focus within BABAR is to make a precision measurements of the CKM matrix element V_{ub}. By exploiting the large available statistics I have initiated the development of new analysis techniques which make the result less dependent on the models that are necessary to describe the behaviour of the b quark within a B meson. I chaired the BABAR review committee for a first V_{ub} paper based on these new techniques. I have contributed substantially to another V_{ub} analysis which improves upon the precision on V_{ub}. These results are the most precise V_{ub} measurement of today and several papers have recently been published. This effort has also spawned a frantic activity among theorists with over 50 papers submitted during the last three years. This collaboration between theorists and experimentalists is very fruitful. This will allow us to continue to improve the precision on V_{ub} so that, together with LHCb measurements of the angle γ, the apex of the unitarity triangle will be very well measured in tree diagrams. I was also involved in the study of CP violation in rare hadronic decays of charged and neutral B mesons.

L3 experiment at LEP, CERN, Geneva (1995-1998):

From 1995 to 1998 I was a member of the L3 collaboration and a maître-assistant at the University of Geneva. The L3 experiment operated at the Large Electron Positron collider (LEP) at CERN. The collected data were used to make precision measurements for many parameters of the Standard model. My interests were the study of couplings and asymmetries of the electroweak interaction, the production of pairs of W bosons, the study of "heavy flavor" hadrons containing a b or a c quark, and the search for the Higgs boson and supersymmetric (SUSY) particles.

I made precision measurements of the lifetime of B mesons and of the electroweak couplings of the b-quark. These measurements agree with the predictions from the Standard Model. I also contributed to results on the spectroscopy of B mesons. We measured the decay constant f_{D_s} with the $D_s^+ \to \tau^+\nu$ and searched for the decay $B^+ \to \tau^+\nu$. With the L3 data we demonstrated that the Standard Model correctly predicts the production of pairs of W bosons. We also searched for the Higgs boson and for physics beyond the Standard Model (SUSY).

As a coordinator of the L3 "Heavy flavor" analysis group I organised and convened the meetings of this group, coordinated analysis topics, supervised graduate students, and took part in the writing of papers. I was also a member of the L3 paper review committee for several papers where I contributed substantially to measurements on the B semileptonic branching fraction, charmless B decays, and electroweak couplings of the b quark. I was also a member of the LEP Electroweak working group, which averaged results from many experiments taking into account the correlation of statistical and systematic errors between and experiments. In addition, I operated the xenon light pulser system which was needed to calibrate each BGO crystal of the electromagnetic calorimeter.

CLEO experiment at CESR, Cornell University, Ithaca (1992 - 1994):

I was a member of the CLEO collaboration for three years (1992 - 1994), working as a Research Associate at Syracuse University. In the 1990s, the CLEO experiment running at the Cornell Electron Storage Ring (CESR) collected what was at the time the world's largest data set of B meson decays. This allowed us to observe rare flavour changing $b \to u$ and $b \to s$ quark transitions and to measure CKM matrix elements. By observing charmless semileptonic decays of B mesons I made a measurement that showed that the CKM matrix element V_{ub} is non-zero, a necessary requirement for CP violation to arise within the Standard Model. The decay constants of heavy mesons are needed to extract V_{td} from measurements of B meson mixing. At CLEO I made the first measurement of the decay constant of the D_s meson, f_{D_s}, by observing the decay $D_s^+ \to \mu^+\nu$. This decay constant allows us to check the theoretical calculations of the decay constant of the B meson, f_B, which is needed to determine the CKM matrix element V_{td} from mixing measurements. With the CLEO experiment, I participated in the first observation of the rare radiative Penguin decays, $B \to K^*\gamma$, $b \to s\gamma$, and rare hadronic decays $B \to K\pi, \pi\pi$. I also made a search for the decay $B \to \eta_c X$ which is useful in CP violation studies. As a member of several CLEO paper review committees, I contributed substantially to measurements of the CKM matrix element V_{cb} by studies of the B semileptonic branching fraction and of the decay $\bar{B} \to D^*\ell\bar{\nu}$.

At Syracuse, I was heavily involved in the design of a RICH detector for CLEO III experiment. I designed and constructed a wire chamber prototype photo detector using TEA/CH_4 as a photo sensitive gas mixture. This prototype was employed to prove successfully the feasibility of this design. A RICH detector based on this technique was subsequently built for the CLEO III experiment.

SINDRUM I and II experiments at the Paul Scherrer Institute, Villigen, Switzerland (1986-1991):

From 1986 to 1991, I was a member of the SINDRUM collaboration. I have a keen interest in the question of flavour changing currents for leptons. The smallness of the neutrino masses and the non-observation of lepton flavour violation are not understood. With the SINDRUM experiments we searched for the lepton flavour violating $\mu^+ \to e^+e^+e^-$ decay and $\mu^- \to e^-$ conversion.

I wrote my Ph.D. thesis on the SINDRUM II experiment, where my main responsibility was the design and construction of the drift chamber which recorded the trajectories of charged particles traversing the magnetic spectrometer. I designed and optimised the radial projection geometry using a CO_2-iC_4H_{10} gas mixture and was heavily involved in the construction. I planned and performed the quality control tests for the drift chamber and tested the front-end electroncis. I also designed the monitor chambers to calibrate the drift velocity of the drift chamber. In addition, I was also responsible for the assembly and the commissioning of the SINDRUM II experiment. I analysed the first data taken with this detector. With the SINDRUM experiments, we measured the world's best limits on lepton flavour violating transitions.

Research Committees:

2007	Member of PPARC Fellowship panel
2006 -	Member of SUPA Research Strategy Group
2006 -	SUPA Particle Physics Theme Leader
2005 - 2008	Member of PPAP - Particle Physics Advisory Panel (PPARC)
2001 - 2007	Member of PPUAP - Particle Physics Users Advisory Committee (CCLRC),
2004	Chair of PPUAC Working Group on Future Technology Needs, report submitted to PPUAC, CCLRC and PPARC.
2002 - 2005	BABAR experiment: Chair of Paper Review Committee.
2002 - 2005	Reviewer for PPARC Fellowship applications
2002	Reviewer of ATLAS and CMS experiments for PPARC (PPRP).
2002	Reviewer of RAL TD effort for CCLRC.
1999	Panel member for LHCb RICH Photo detector choice.
1998	Reviewer for paper in European Physics Journal C.
1998 - 1999	Member of LEP Electroweak Working Group.
1995 - 1999	L3 experiment: Member/chair of several Paper Review Committees on “Heavy-flavour” decays and electroweak couplings.
1992 - 1995	CLEO experiment: Member of several Paper Review Committees on study of decays of B and D mesons.

Administrative Experience:

	Research:
2005 - 2007	Member of LHCb Speakers Bureau
2003 -	Deputy Particle Physics Experiment (PPE) Group Leader
2003 -	Member of LHCb-UK Steering Board
2001 -	Member of LHCb-UK Project Management Committee
2001 -	Project Manager for LHCb RICH photodetector test facilities
1999 -	Coordinator for Multianode Photo Multiplier Tubes Development
1999 -	Member of LHCb Collaboration Board
1999 -	Leader of Edinburgh PPE LHCb group
1998 - 1999	L3 experiment: Coordinator of "Heavy flavor" analysis group.

	Department/School of Physics
2005	Member of Professorial Appointment Panel
2003 - 2005	Member of several Lectureship & Readership Appointment Panels
2003 - 2005	Member of School Computing Committee
2003 - 2004	Member of Curriculum Project/Semesterisation Task Force
2002 -	Chair of Laboratory Teaching Task Force
2003 - 2005	Elected Member of School Management Committee
2000 - 2002	Elected Member of Head of Department's Committee
2001	Member of Electronics Teaching Task Force
2000	Member of Technical Staff Review Committee

	Conferences, Workshops, Exhibitions:
2007	Chair organizer: "LHCb Upgrade workshop" at Edinburgh
2005 - 2007	Convenor: "Flavour in the era of the LHC" workshop at CERN
2006	Editor and Co-organiser of SUSSP61 a Summer School in "Neutrinos in Particle Physics, Astrophysics and Cosmology in St.Andrews".
Jun 2003	Chair: MaPMT workshop, Imperial College, London
Apr 2003	Convenor: "Open Forum on B Physics at Hadron Colliders", CKM workshop at Durham
Jun 2002	Chair organizer: LHCb-UK meeting, University of Edinburgh
Oct 2001	PPARC Travelling Exhibition at Dynamic Earth centre, Edinburgh
Apr 2000	Local organizer: IoP Particle Physics 2000 and Higgsfest, University of Edinburgh

Teaching Experience:

2005 - 2006	SUPA Graduate School interactive classes
2004 -	Junior Honours Particle Physics lectures[a].
2004 -	Junior Honours Particle Physics tutorials[a].
2004 - 2006	Junior Honours (Third Year) Programme Coordinator[a].
2003 -	First Year Physics 1Bh lectures[a]
2003 -	First Year Physics 1Bh tutorials[a]
2001 -	Fourth Year Laboratory projects supervisor[a].
2001 - 2004	Postgraduate Particle Physics lectures[a].
1999 - 2006	Third Year Physics laboratory supervisor[a].
2000 - 2004	Course Organiser for Physics 3
2000 - 2004	Fourth/Fifth Year Particle Physics lectures[a].
2000 - 2004	Fourth/Fifth Year Particle Physics tutorials[a].
2001 - 2003	Physics 2 tutorials[a].
2000 - 2002	M.Phys. Group project (Fourth year) supervisor[a].
1999 - 2000	First Year Physics 1Bh tutorials.[a]
1997 - 1998	Nuclear Physics teaching assistant[b].
1995 - 1998	Physics laboratory for medical and science students[b].
1988 - 1989	Data Analysis and Atomic Physics teaching assistant[c].
1986 - 1991	Physics laboratory for medical and science students[c].
1983 - 1985	Physics lectures (3 - 6 hours weekly) at Matura School[d].

[a] University of Edinburgh.
[b] University of Geneva.
[c] University of Zurich.
[d] Matura (University entry exam) school for adults (college) at St.Gallen.

Research Related Teaching Experience:

1999 -	First Supervisor of six (currently three) Ph.D students
1999 -	Second Supervisor of six (currently two) Ph.D students
2005 - 2006	Organiser of SUPA particle physics Graduate School programme
Feb 2007	External Examiner for a Ph.D. Thesis, University of Melbourne
Nov 2006	External Examiner for a MSc Thesis, University of Glasgow
Nov 2006	External Examiner for a Ph.D Thesis, Royal Holloway, London
Oct 2006	External Examiner for a Ph.D Thesis, University Blaise Pascal, Clermont-Ferrand
Mar 2006	External Examiner for a Ph.D Thesis, Imperial College, London
2005 - 2006	Supervisor of a final year MPhys project student
Mar 2004	External Examiner for a Ph.D Thesis, Imperial College, London
Dec 2003	Internal Examiner for a Ph.D. thesis
Sep 2003	Lecturer at Summer School, Prerow
2002 - 2003	Supervisor of a MSc by Research student
2002 - 2004	School of Physics General Interest Seminar Organiser, bi-weekly
2000 - 2006	Supervisor of several summer students
2001 - 2002	Supervisor of a final year MPhys project student
Oct 2002	External Examiner for a Ph.D Thesis, University of Dresden
May 1999	Internal Examiner for a Ph.D. thesis
1995 - 1997	Particle Physics Seminar Organiser, bi-weekly
1995 - 1998	Supervisor of a graduate student at the University of Geneva

Invited Talks at Conferences and Schools

1. "LHCb Upgrade Plans", 11th International Conference on B-physics at Hadron Machines, (Beauty 2006), Oxford, UK Sept 25 - 29, 2006.

2. "Production of HPDs for the LHCb Experiment", "IEEE Nuclear Science Symposium and Medical Imaging", Wyndham, Puerto Rico, Oct 24 - 29, 2005.

3. "Performance of MaPMTs with Beetle-chip Read-out ", 5th Workshopon Ring Imaging Cherenkov Counters (RICH2004), Playa del Carmen, Mexico, Nov 30 - Dec 5, 2004.

4. "Rare Decays — New Physics and CP Violation",
Lectures at International School on CP violation and heavy quark physics, Prerow, Germany, Sep 21 - 27, 2003.

5. "Experimental Review of Inclusive $|V_{ub}|$ Measurements,"
2nd Workshop on the CKM Unitarity Triangle, 5-9 Apr 2003, Durham, England.

6. "Multianode Photo Multipliers as Photo Detectors for Ring Imaging Cherenkov Detectors", 4th Workshop on RICH Detectors at the Nestor Institute, Pylos, Greece, (RICH2002), June 5 -10, 2002.

7. "Status of the LHCb Experiment",
7th International Conference on B-Physics at Hadron Machines, (BEAUTY2000), Sept. 13 - 18, 2000, Kibbutz Maagan, Israel

8. "Multianode Photo Multipliers for Ring Imaging Cherenkov Detectors",
XXXth International Conference on High Energy Physics, (ICHEP 2000, IUPAP), July 27 - August 2, 2000, Osaka, Japan

9. "B and D Spectroscopy at LEP",
Workshop on Heavy Quarks at Fixed Target HQ98, Fermilab, Batavia, Il, (Oct. 9-12, 1998)

10. "A Review of B Hadron Lifetimes",
International Europhysics Conference on High Energy Physics, Jerusalem, Israel (19-26 August 1997)

11. "Charm Production in B Decays",
8^{th} Meeting of the American Phys. Society, Division of Particles and Fields, Albuquerque, NM (Aug 2-6, 1994)

12. "First Measurement of $\Gamma(D_s^+ \to \mu^+\nu)/\Gamma(D_s^+ \to \phi\pi^+)$",
5^{th} International Symposium on Heavy Flavour Physics, Montreal, Canada (July 6-10, 1993)

13. "Confirmation of Charmless Semileptonic Decays of B Mesons",
7th Meeting of the American Phys. Society Division of Particles and Fields, Batavia, Illinois (Nov 10-14, 1992)

14. "Search for $\mu^- \to e^-$ Conversion with SINDRUM II",
XXVIth Rencontres de Moriond, Les Arcs (March 11-17, 1991)

15. "A Search for Muon-Electron Conversion",
Spring Meeting of Nucl. Phys., Strasbourg, (March, 1990).

Invited Talks and Seminars:

1. "LHCb Upgrade Plans",
   "Flavour in the era of the LHC" workshop, CERN, Oct. 9, 2006.
2. "Future of Flavour Physics at Hadron Colliders",
   Future of Flavour Physics meeting, London, Oct. 6, 2006.
3. "Summary from Working Group 2 - B/D/K Decays",
   "Flavour in the era of the LHC" workshop, CERN, May 17, 2006.
4. "Report from Working Group 2 - B/D/K Decays",
   "Flavour in the era of the LHC" workshop, CERN, Nov. 10, 2005.
5. "Instrumentation at the Linear Collider", SUPA Particle Physics Launch event, Glasgow, October 12, 2005.
6. "The Beautiful World of CP Violation", Particle Physics & Cosmology Workshop, Edinburgh, July 2, 2004.
7. "LHCb RICH Detectors", PPRP meeting, RAL, Mar 24 2003.
8. "UK Participation in the LHCb Experiment",
   PPC meeting, Coseners (Nov 2., 2000).
9. "Leptonic Decays of Heavy Mesons",
   Syracuse University, Syracuse (Oct 14., 1998).
10. "CKM Matrix und CP Verletzung",
    University of Zürich, Zürich (June 12., 1998).
11. "New Measurements at $\sqrt{s} = 161$ GeV with the L3 Experiment",
    University of Neuchâtel, Neuchâtel (Nov. 26., 1996).
12. "Semileptonic and Rare B Decay Results from CLEO",
    University of Zürich, Zürich (Dec. 7., 1995).
13. "Measurement of CKM Matrix Elements and Meson Decay Constants with CLEO",
    University of Geneva, Geneva (March 8., 1995).
14. "Latest Charm Physics Results from CLEO",
    Paul Scherrer Institute, Villigen (Dec. 22., 1993).
15. "Search for $\mu^- \to e^-$ Conversion with SINDRUM II",
    University of Neuchâtel (May 14., 1991),
    Lawrence Berkeley Laboratory, Berkeley (Sept. 19., 1991),
    University of California, Santa Barbara (Sept. 23., 1991),
    University of California, Irvine (Sept. 24., 1991),
    Syracuse University, Syracuse (Sept. 26., 1991),
    Brookhaven National Laboratory, Upton (Sept. 30., 1991).

Contributed Talks to Conferences:

1. "New Measurements at $\sqrt{s} = 161$ GeV with the L3 Experiment",
   at the Autumn-Meeting of Swiss Physical Society (SPG), University of Zürich (Oct. 10., 1996).

2. "Search for the Decay $B \to \eta_c X$",
   at the Meeting of the American Phys. Society, Washington DC (April 21., 1994).

3. "Investigation of the Decay $D_s^+ \to \mu^+ \nu$",
   at the Meeting of the American Phys. Society, Washington DC (April 15., 1993).

4. "The SINDRUM II spectrometer",
   PANIC XII, Boston (1990).

5. "Search for $\mu^- \to e^-$ conversion"
   Rare Decay Symposium, Vancouver, (Nov 30 - Dec 3, 1988).