

## Personal Information

- Married, 2 children
- Nationality: British
- Date of birth: 21<sup>st</sup> October 1967

## Present Position

CERN Applied Physicist since 1994 for CMS Collaboration

### **January 1994 – July 1996: *Applied Fellow for CMS Preshower detector (part of ECAL)***

Contributions included basic detector optimization (from simulation), beam test participation (for CMS ECAL and Preshower); Verilog design of front-end electronics (digital “sequencer” for first version of PACE ASIC)

### **August 1996 – present: *CERN Staff member (IC since 2003) for CMS calorimetry Preshower detector (1996 – present)***

- Optimized Preshower design, working closely with engineers (mechanical, electronic, electrical)
- Responsible for beam & system tests, coordinating teams from CERN, Taiwan, Greece, India, Russia
- Replaced P. Bloch as Preshower System Co-Manager in 2004 (with A. Peisert)
  - CORE cost ~7 MCHF
  - team of about 40 physicists, engineers, technicians
  - mainly focused on electronics systems and engineering (silicon was with A. Peisert)
- Developed QA/QC procedures & wrote technical specifications with A. Honma
- Developed testing software and procedures for ASICs, hybrids, boards & systems, and organized all testing by collaborators
- Oversaw (and participated in) final Preshower assembly (finished Feb. 2009) & installation
- Supervised DAQ/DQM team for commissioning & operation, with cosmics, “splashes” and beams
- Distributed long-term responsibilities to external groups where possible
- Remained overall responsible for the Preshower ever since, including:
  - led investigations of anomalous leakage currents in some silicon sensors, and developed mitigation
  - led investigation and subsequent repairs of “feedthroughs” for longer-term reliability (included removal & reinstallation of Preshower in LS1
  - worked with H. Postema to decrease operation temperature to improve longevity
  - overseeing long-term maintenance (PSUs etc.), measurements (leakage currents), DAQ improvements etc

### **ECAL detector (2010 – 2015)**

- Appointed as Joint Deputy System Manager to R. Rusack in 2010
  - Responsible for ECAL operations, M&O-B determination
  - Implemented JIRA tracking system for “issues” & DocDB for document storage (both still used)
  - Streamlined operations through common software for all ECAL sub-systems & automation
  - Instigated rigorous review process for presentations and subsequent conference reports
- Nominated as ECAL System Manager in 2011 but withdrew, but continued position as Deputy to T. Tabarelli de Fatis
  - Responsible mainly for operations, complementing Tommaso’s DPG knowledge
  - Acted as Field Technical Coordinator when necessary (due to long-term illness of one person)
  - Project-managed new laser calibration system (specifications, procurement, installation, commissioning)
  - co-convener of CALOR 2012 “LHC Calorimetry” session
- Appointed ECAL System Manager for Jan. 2013 – Aug. 2015
  - Refurbishment of several parts of ECAL in LS1, including PSUs and Preshower
  - Led investigations into long-term radiation damage to ECAL endcaps & possible mitigation through:
    - annealing via laser light, elevated temperature
    - possible removal and replacement of innermost crystals
    - addition of new “nose” at high eta where Preshower is currently located
    - completed endcap replacement (the solution adopted)
  - Developed, with engineers and physicists, Phase-II upgrade plan for ECAL barrel and endcaps
  - Main editor of ECAL section of CMS Phase-II Technical Proposal & responsible for preliminary budget
  - Re-instigated “ECAL days” to bring community closer
  - Re-wrote ECAL “Constitution” with ECAL Institution Board Chairperson to bring it in line with operation and upgrade phase of the ECAL
  - Planned succession for System Management, Technical Coordination, DAQ team, Upgrade Coord.
  - Invited speaker for plenary ECAL talk at IEEE 2013

### **As member of CMS Management Board (2010 – 2015)**

- Suggested re-branding of CMS “service tasks” as “Experimental Physics Responsibilities” (accepted)
- Instigated CMS Induction Course (with A. Dabrowski) in 2014: 150 participants; now a regular course

### **HGCAL detector (2015 – present)**

- Member of Steering Group & Institution Board
- Developed draft HGCAL “Constitution”, drawing on experience in ECAL
- Formalized HGCAL Editorial Board and Conference Committee, and nominated as Chairperson for both bodies
- Responsible for Beam Tests and System Tests, including:
  - Organization of team of (mostly) newcomers, in hardware, operation, analysis
  - Insisted on development of DCS/DSS hardware/monitoring & simulations in advance
  - First tests of irradiated silicon diodes for precision timing (re-using some hardware from Tracker/Preshower)
  - Beam tests of hexagonal silicon modules at CERN & DESY, together with CALICE AHCAL
    - Developed and implemented first QA/QC procedures for silicon modules
    - Main editor of first HGCAL JINST publication from 2016 beam tests
    - Culminated in LHCC milestone test in 2018 of ~100 modules (analysis ongoing)
  - Good relationship with SPS team to understand upstream material & profit from NA61 operation
  - Wrote sections in HGCAL TDR on beam/system tests
  - Coordinating system tests with common developments (IpGBT, FEAST, VL+, Serenity)
- Worked closely with electronic engineers for module “hexaboards”, including liaison with companies
- First liaison with EP-LCD to define common areas of interest (silicon sensors), lab. space & participation to beam and system tests
- Invited speaker on HGCAL for BTTB6, EP Seminar, CEPC Workshop, INFN Academic Training, PSI Seminar, TWEPP conference (all in 2018), Inferi school (2019)
- Gave CERN academic training lecture on Calorimetry in 2016

### **EP-CMX Group Leader (October 2017 – present)**

- >40 staff, plus fellows, students, trainees, external members → >100 people
- 3 sections: “Detector Applications”, “Engineering & Integration”, “Safety, Coordination & Infrastructure”
- Responsible for Exploitation Budget of ~900k/year

### **Education & Outreach**

- CMS E&O Coordinator (1998-2012)
  - Developed first CMS public web site, including web-cams, reference documents etc.
  - Creation of “visitors’ gallery” at P5, visit itinerary, training of guides
  - Conception & producer of “CMS Times” newsletter
  - Designed & produced CERN playing cards (~100000 copies sold @ CERN)
  - Organization, with CMS managements etc., of CMS events with press and public
    - edited many of the “CMS statements” announcing physics results
    - CMS “lowering” of YB0 – biggest CERN press event at the time
    - Higgs discovery announcement in Melbourne
  - Main editor of CMS article in “Science” magazine special edition; liaison with publisher
  - Instrumental in getting CMS data (including Higgs candidates) made public for educational purposes
- Awarded EPS “Outreach prize” in 2005
- Co-author and co-star of TEDed animation “Basics of the Higgs boson” (~1M views)
- Co-chair of EPPOG (European Particle Physics Outreach Group) 2009-2013
  - Pushed successful transition to IPPOG (“International”), endorsed by ECFA and EPS-HEPP
  - Obtained person-power funding from CERN DG
  - Helped develop “Masterclasses” for high-school students, based on LHC data
  - Organized first E&O session at ICHEP 2012
- Organized first E&O session at EPS-HEP 2015
- Sole non-US member of QuarkNet advisory board (2005-2014)
- Developed and have given “10 minutes of fame” tutorial on presentation skills 6 times since 2018

### **Education 1987 – 1993: Imperial College, London, UK**

PhD and Diploma of Imperial College: “*Observation of beauty particles in pion-nucleon collisions at 26 GeV centre-of-mass energy*”

BSc in Physics with 1<sup>st</sup>-class honours, and Associateship of the Royal College of Science

### **Languages**

English mother tongue  
Good spoken and written French

### **Interests**

Taekwondo 1<sup>st</sup> Dan black belt, double gold medalist at Swiss Championships 2016, treasurer and instructor at CERN Taekwondo Club