

Curricula of instructors

Vacuum physics and technology, Part A, June 27th, 2004

Ferruccio Balestra took the PhD in physics at Torino university and he is full professor of General Physics at the Torino University. From 1973 to 1988 he performed researches at the INFN in the Torino section and was associated professor of General physics at Cagliari university from 1988 to 1991 and at Torino University from 1991 to 2002.

Scientific activities:

- Experiments and researches in the field of experimental nuclear physics at low, intermediate and high energies;
- JINR (Dubna – Russia) and INFN Frascati Laboratories (Frascati Rome – Italy) experiments for studies of pion – nuclei elastic and inelastic scattering using a self-shunted streamer chamber;
- LEAR- CERN experiments PS-179 and OBELIX aimed at the investigation of antinucleons interaction with nucleons and light nuclei;
- DISTO experiment to study the polarization effects in the associated strangeness production in proton-proton interaction at the SATURNE Laboratories (Saclay- France);
- JINR - DUBTO experiment studying pion- nucleus interactions at very low energies;
- CERN-COMPASS experiments at high energy with beams of leptons and hadrons to study hadron structure and hadron spectroscopy.

Teaching activity in the field of: Physics: Electromagnetism; Statistics: Data Analysis; Laboratories of Mechanics and Thermodynamics, Vacuum Technology : Elements.

Oleg Malyshev: graduated in Physics in 1989 at Physics Department of Novosibirsk State University, (Russia). Nine years of experience at Budker Institute of Nuclear Physics (Novosibirsk, Russia) on Vacuum design for VEPP-5, for the experimental beamlines and installations on VEPP-2 and VEPP-3, for SSC (USA), for elements of ANKA and BESSY (Germany).

All this time I have been working at Budker Institute making an experimental research and design work for other projects as a collaboration or contract work.

He gained experience by performing experiments in gas photodesorption from different materials and at different conditions and on cryosorption and cryocondensation experiments.

In 1995 obtained PhD with "The study of photodesorption processes in the prototypes of vacuum chamber of Superconducting Super Colliders". From 1998 to 2001 at CERN he has been involved in LHC vacuum design and experiments with NEG coated vacuum chamber. From 2001 is working at ASTeC, CCLRC Daresbury Laboratory, UK on vacuum design for diamond (the UK 3rd generation light source) then for 4GLS (4th generation light source) and in experiments with NEG coated vacuum chambers and cryosorbers.

Publications: above 60 papers and reports.

Professional interests: Large Scale Vacuum Systems, Pressure Distribution Calculations, Vacuum System Design, Vacuum Modelling; Photon, electron and ion stimulated gas desorption and thermal desorption from materials used in vacuum chamber (at both room and low temperatures); Processes in vacuum chamber at low temperatures; Beam induced electron multipacting in a vacuum chamber; Beam induced ion desorption instability; NEG coated vacuum chamber; New cryosorbing materials."

Correale Raffaele, *Formazione*: laurea in fisica conseguita presso l'università di Pisa (1993) il lavoro relativo alla tesi e la sua elaborazione sono stati effettuati in collaborazione con il Professore Robert Schlögl, Direttore del Fritz Haber Institut der Max Plank Gesellschaft di Berlin; corso post-laurea su Fisica dei campi quantistici, presso l'Università di Pisa negli anni 1993-1994; dottorato in Fisica-Chimica conseguito nel 1999 presso l'Università di Trento, con il prof. Bassi, su ricerca, esplorazione ed applicazione della meccanica dei fluidi, della spettrometria di massa e delle tecniche "ione-molecola" nell'industria e nella biologia.

Attività universitaria: Ricerca Teorica (1995-1996) su: *Plasma e ottica non lineare presso l'Istituto di Fisica atomica e Molecolare del CNR di Pisa*

Insegnamento presso l'Università di Trento (1997-1999) come assistente nei corsi di Fisica I, Fisica II, Tecniche di Vuoto

Ricerca Universitaria applicata (1999-2000) con Contratto Post-Doc presso l'Università di Trento (Laboratorio di Fasci molecolari) dal titolo: *Messa a punto di metodi di spettrometria di massa per quantificare il numero di molecole presenti in tracce nell'aria inspirata o nell'atmosfera.*

Dal 2001 svolge attività presso la Società Varian Vacuum Technology come R&D Specialist for the Mass Spectrometry and Analytical Instruments Applications

Karl Josten, graduated in physics in 1984 at Heidelberg University with a diploma on lattice localization by Rutherford backscattering he performed PhD from 1985 to 1987 at the Max Planck-Institute for Nuclear Physics in Heidelberg and the thesis was about "Development of a high-brightness field ion source.

After the achievement of PhD the activities may be summarized as follows:

- 1988-1989 Scientific assistant at the Max –Planck-Institute for Nuclear Physics (ion beam optics)
- 1990 post-Doc at the Oregon Graduate Centre (now Oregon Graduate Institute of Science and Technology) in Beaverton -Oregon –USA (high frequency modulation of a liquid metal ion source)
- May 1990 Scientific Assistant at the Physikalisch-Technische Bundesanstalt in Berlin (laboratory of Vacuum Metrology)
- 1992 Head of Vacuum metrology at PTB. Since then many publications in the field of Vacuum Metrology, book chapters in "Foundations of Vacuum Science and Technology (Ed Lafferty) and "Handbuch Vakuumtechnik" and editor of the "Handbuch Vakuumtechnik"
- 1997 Member of the Advisory Committee for Vacuum Technique in the DIN (German Office for Standardisation)
- 1998 Head of the Section vacuum Science and technique of the German Physical society and German Vacuum Society. Re-elected in 2001.
- 2001 Member of Vacuum Science Division (VST) of IUAV
- 2002 Vice President of German Vacuum Society
- 2003 Local organizer of the 8th European Vacuum Conference/european Vacuum Congress – Berlin 2003 (340 participants). Project leader of working group for ISO TC 112 (vacuum Technique)

Anita Calcatelli: after graduation in physics and a short period of activity in the field of nuclear reactors in a private company, in 1963 joined the National Research Council (Istituto Dinamometrico, that became a section of the Istituto di Metrologia G.Colonnetti) where until 1972 was involved in fundamental researches on thin metal and semiconductor films and application of laser interferometry.

In 1972 she started new activities more related to metrology and has developed systems for calibration of vacuum gauges and leaks and studies on physical. Other activity field was related to researches on the stability in time of materials used in metrological applications (vacuum but also in the mass metrology) by TDS, Auger, XPS and SIMS.

Activity in associations, institutions, working groups: - CCM (Comité Consultatif pour la Masse et les Grandeurs apparentées) of the CIPM (Comité International des Poids Et mesures): Italian representative in the « very low pressure group » before and, at present, in the “low pressure” group”; - IUVSTA: from 1976-1986 she was member as Italian representative of the executive council with several tasks in various committees and later as member (1986-1989) of the directory Board of the Vacuum Physics Division; - AIV (Associazione Italiana del Vuoto): member of the directory board in several periods, president and vice-president several times and so in the Scientific Committee of the review “il Vuoto”; - UNI (Ente Italiano di Unificazione: member of the “Non destructive committee” and chair-person of the “leak detection” working group.

Experience in foreign laboratories: many stages in foreign laboratories in Belgium, Canada, Usa, India, P.R.China, Korea, Singapore etc.: at beginning the stages were for training then after 1980 the stages were devoted to transfer the experience to other researchers.

Teaching: many courses on metrology and on vacuum physics and technology in cooperation with several institutions.

Quality activity: As member of “quality group” (till the end of 2002) of the IMGC-CNR A.Calcatelli has been involved in the organization of the metrological activity (ISO 17025 standards) for the institute in general and in particular for what concerns the activity of the dynamometric department (force, pressure, hardness, vibration, torque, gravity primary activity and dissemination) of which she was responsible from 1995 till 2002.

Publication: more than 120 papers, lectures at congresses, parts of books, monographies)

At present: leader of the IMGC-CNR vacuum metrology group.

Noel Hilleret: After a thesis in Grenoble on the analysis of thin insulating films by secondary ion emission, N. Hilleret joined CERN (Geneva) where he works since 1974.

He was in charge of surface studies including secondary electron emission and desorption from cold surfaces. He took also part in the supervision of the high intensity runs on the ISR proton storage ring during which the ion induced pressure runaways were studied.

He has been involved in the design and construction of the LEP high energy electron storage ring and was in charge of its operation during the LEP2 energy upgrade from 60 to 100 GeV.

He participated in the setting up of the coating method to produce niobium thin films in superconducting accelerating cavities.

He is now a member of the CERN vacuum group that is in charge of the vacuum system of CERN accelerators and of the design and construction of the Large Hadron Collider.