Curriculum vitae

François BOCHUD

Institute of Radiation Physics
IRA - CHUV
Rue du Grand-Pré 1
1007 Lausanne
Switzerland

1. Current position

2005 - present	Director of the Institute of Radiation Physics (IRA) at Lausanne University Hospital, Switzerland

2. Education

Full professor	2012 - Université de Lausanne, Faculté de Biologie et Médecine
Associate professor	2005 - Université de Lausanne, Faculté de Biologie et Médecine
Privat docent	2003 - Université de Lausanne, Faculté de Biologie et Médecine
PhD in sciences	1997 - Université de Lausanne, Faculté des Sciences
Medical physicist	1995 - Société suisse de radiobiologie et physique médicale
Radioprotection expert	1991 - Institut universitaire de radiophysique appliquée
MSc in physics	1989 - École polytechnique fédérale de Lausanne

3. Professional and academic experience

The Institute of radiation physics (IRA) employs 60 collaborators, who cover the whole range of applications of ionizing radiations in medicine and radiation protection in general. This led me to develop the following main collaborations:

- activity measurement in the environment, radiation protection in general and medical physics with the Federal Office of Public Health;
- ionizing radiation measurement with the Federal Institute of Metrology;
- Monte Carlo calculation and radiation protection expertise with the Swiss Federal Nuclear Safety Inspectorate;
- Monte Carlo calculation and incorporation measurement with the Labor Spiez;
- model observers for medical image quality with several leading research laboratories.

Furthermore I am active the following instances:

- International Commission on Radiological Protection, ICRP (member of Committee 4, 2013-2021; member of the Main Commission and chair of Committee 2 since 2021). Its mission is to protect people, animals, and the environment from the harmful effects of ionizing radiation. Its recommendations form the basis of radiological protection policy, regulations, guidelines and practice worldwide.
- International Commission on Radiation Units and Measurements, ICRU (member, since 2020). This commission develops concepts, definitions and recommendations for the use of quantities and their units for ionizing radiation and its interaction with matter, in particular with respect to the biological effects induced by radiation.
- I also was a member of the Swiss Federal Commission on Radiological Protection since 2006, and president of this commission from 2013 to 2021.

4. Scientific publications

- ORCID record: https://orcid.org/0000-0003-2076-0296
- List of publications: https://applicationspub.unil.ch/interpub/noauth/php/Un/UnPers.php?PerNum=23544&LanCode=37&menu=pub

4. Research projects as leading investigator

- 2021: Medical image quality: Model observers of radiologists performing a search task and AI algorithms that include the anatomical texture in low-contrast CT diagnostics.
- 2019: Physicochemical and biological basis of the FLASH-RT effect in radiation therapy.
- 2014: Model observers for detection in 3D medical imaging.
- 2011: 3D model observer for detection in CT imaging.
- 2007: Role of tumor shape and background in breast imaging: from digital mammography to breast tomosynthesis.
- 2004: Breast texture synthesis and estimation of the role of the anatomy in the radiological detection process.
- 1998: Characterization of the detection process in mammography.

5. Supervised PhD theses, important contributions to the career of scientists

Jean-Pascal LAEDERMANN	2003 – Théorie bayesienne de la décision statistique et mesure de la radioactivité
Cyril CASTELLA	2009 – Breast texture synthesis and estimation of the role of the anatomy and tumor shape in the radiological detection process: from digital mammography to breast tomosynthesis
Olivier PISATURO	2009 – Développement et validation d'une méthode de calcul indépendant des unités moniteur basée sur les simulations Monte Carlo pour la vérification des traitements IMRT
Andreas JOOSTEN	2012 – A peripheral dose calculation model for estimating second cancer risk after breast radiotherapy
Karin SCHOMBOURG	2013 – Dose reconstruction in the context of Tomotherapy
Georg KROPAT	2015 – Predictive analysis and mapping of indoor radon concentrations in Switzerland
Ruslan CUSNIR	2015 – In–situ speciation measurements and bioavailability determination of plutonium in natural waters of a karst system using diffusion in thin films (DGT) techniques
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Ivan DIAZ	2017 – Development of anthropomorphic model observers for signal detection in volumetric images
Alexandre BA	2018 – Model Observers for Image Quality Assessment in X–Ray Computed Tomography Imaging Systems
Matthieux SCHOPFER	2019 – Optimisation et assurance qualité du traitement à partir de la fluence sortante en tomothérapie
Sheeba THENGUMPALLIL	2020 – Impact of uncertainties in the management of respiratory motion for modern radiotherapy
Archonteia KYROUDI	2020 – Multi–criteria optimization and decision making in Radiotherapy

Siria MEDICI	2020 – Anthropogammametry measurement an in situ screening
Patrik JORGE	2021 – Dosimetry in Flash irradiation
Valentin BONVIN	2022 – Radiological characterization of material from accelerators
Josh CHAPLIN	2022 – Development and application of diffusive gradients in thin films (DGT) and crossflow ultrafiltration techniques for determining actinides (Pu, Au, U) speciation and availability at a marine site contaminated by the Sellafield (UK) nuclear discharges
Flore CHAPPUIS	2023 – A Novel Approach to Radiotherapy using Ultra-High Dose Rate Radiations: Uncover the Early Mechanisms of the FLASH Effect with Monte Carlo Techniques
Diana WUETHRICH	2023 - Pareto multi criteria optimization in radiation therapy treatment planning
Laura EVANS	current – Model observers in CT low contrast imaging
Tristan GENETAY	current – Timepix 4 for scattered field characterization in hospital theatres, personnel/patient dose reduction, pedagogical tool, new RP units benchmarking

7. Teaching activities

My direct involvement in structured teaching at 1st,2nd and 3rd cycle level totals over 90 hours per year. This is summarized in the table below:

Institution	Public	Cycle	Subject	Duration [h/y]
UNIL	MD	1st	General physics	25
			Fluid mechanics	4
			Medical imaging	4
		2nd	Radon & legislation	2
	Health scientists	1st		
	PhD	3rd	Risk	10
Prorame	MD	3rd	Radioprotection	8
FMH	MD (RAD, NUC, RTH)		Radiation physics and statistics	6
EPFL	Engineers	2nd	Medical imaging	3
		2nd	Incorporation	3
ETHZ	Medical physicists (every two years)	3rd	Radioprotection	8
	Toxicologists	3rd	Incorporation of radionuclides	3
ccCTA	Toxicologists	3rd	Incorporation of radionuclides	2
IRA	RP experts	3rd	Radioprotection	2
Hesav	RTT (until 2021)	1st	Radiation physics	24

I have been regularly nominated and awarded for the best teaching of the first year at Lausanne University Medical School.

In 2024, the Faculty of Biology and Medicine honored me with the *Outstanding Undergraduate Teaching Award for the School of Medicine*.

8. Governing activities

Journal reviewer

- Medical Physics, Physics in Medicine and Biology, Nuclear Instruments and Methods, European Radiology, Applied Radiations and Isotopes, Journal of the Optical Society of America A, Radiation Protection Dosimetry, Journal of Medical imaging.

Task groups

- Co-chair of TG109: Ethics in Radiological Protection for Medical Diagnosis and Treatment (International Commission on Radiological Protection, ICRP).
- Chair of multiple task groups within the Swiss federal commission of radiation protection.
- Sponsor of RC38 task group on model observers (International Commission on Radiation Units and Measurements, ICRU).

9. Organization of conferences

- Fourth European IRPA Congress, Geneva June 2014, 800 participants (chairman of the organizing committee)
- National seminar on radiation protection –yearly since 2010, 100 participants (organizing committee)
- Image perception sub-conference - during the Medical Imaging SPIE Conference, yearly since 2014, 1000 participants (scientific committee)
- Workshop - Toward robust and traceable model observers – during the Medical Imaging SPIE Conference, Houston TX February 2018, 100 participants (organizing committee)
- Medical physics national meeting, SRMP, Lausanne November 2018, 150 participants (scientific committee)

10. Outreach (e.g., technology and knowledge transfer activities)

- None.

11. Research career breaks

- None

12. Other personal interests

- Mountain climbing, trail running
- History