

# Christian Di Carlo, Ph.D.

🏢 Italian National Institute of Health  
🏢 National Center for Radiation Protection and Computational Physics  
✉ christian.dicarlo@iss.it  
☎ +39 0649903780 📱 +39 3476693852  
🌐 <https://www.linkedin.com/in/christian-di-carlo-869b71168/>



## Employment History

- 2021-ongoing 📌 **Researcher** at the National Center for Radiation Protection and Computational Physics of the **Italian National Institute of Health**.
- 2021 📌 **Research Assistant** at the National Center for Radiation Protection and Computational Physics of the **Italian National Institute of Health**.
- 📌 **Research Assistant** at the Department of Basic and Applied Sciences for Engineering of **Sapienza - University of Rome**.
- 2021-ongoing 📌 **Professor** at the Department of Astronautical, Electrical and Energy Engineering of **Sapienza - University of Rome**.  
Subject: *Radiation Protection for the Environment and the Nuclear Medicine* for the *Master Degree in Nuclear Engineering*
- 2017–2021 📌 **Mentor** at the Department of Basic and Applied Sciences for Engineering of **Sapienza - University of Rome**.  
Subject: *Radiation Protection* for the *Master Degree in Nuclear Engineering*
- 📌 **Mentor** at the Department of Basic and Applied Sciences for Engineering of **Sapienza - University of Rome**.  
Subject: *Measurement and Characterization of Nuclear Materials* for the *Master Degree in Nuclear Engineering*
- 2018–2020 📌 **Mentor** at the Department of Basic and Applied Sciences for Engineering of **Sapienza - University of Rome**.  
Subject: *Physics* for the *Bachelor Degree in Clinical Engineering*
- 2017–2020 📌 **Mentor** at the Department of Basic and Applied Sciences for Engineering of **Sapienza - University of Rome**.  
Subject: *Physics* for the *Bachelor Degree in Chemical Engineering*
- 2017 📌 **Intern** at the Laboratory of Radiation Protection of **Sapienza - University of Rome**.
- 2015 📌 **Intern** at **Nucleco S.p.a.**, ENEA Casaccia Research Center.

## Education

- 2017 – 2020 📌 **Ph.D., Sapienza - University of Rome** in Energy and Ambient.  
Thesis title: *Radon in indoor air and water: design and development of experimental apparatuses and measurement protocols*.
- 2020 📌 **Qualification to the Profession of Radiation Protection Expert - I Degree** (Italian legislation).
- 2018 📌 **Qualification to the Profession of Engineer** (Italian legislation).
- 2015 – 2017 📌 **Master Degree at Sapienza - University of Rome, Italy** in Nuclear Engineering.  
Thesis title: *Design and commissioning of an affordable apparatus for computed axial micro-tomography*.
- 2012 – 2015 📌 **Bachelor Degree at Sapienza - University of Rome, Italy** in Energy Engineering  
Thesis title: *Evaluation of radioactive gaseous effluents from treatment system for solid waste of Nucleco S.p.A. repository at the ENEA Casaccia Research Center*.

## Research Publications

### Journal Articles and Conference Proceedings

- 1 **Di Carlo, C.**, Ampollini, M., Antignani, S., Caprio, M., Carpentieri, C. & Bochicchio, F. (2022). Thoron interference on performance of continuous radon monitors: An experimental study on four devices and a proposal of an indirect method to estimate thoron concentration. *International Journal of Environmental Research and Public Health*, 19, 2423. <https://doi.org/10.3390/ijerph19042423>
- 2 Venoso, G., Iaconi, A., Pratesi, G., Guazzini, M., Boccini, L., Corbani, E., Bucci, S., Leonardi, F., Trevisi, R., Ampollini, M., Antignani, S., Caprio, M., Carpentieri, C., **Di Carlo, C.** & Bochicchio, F. (2021). Impact of temporal variability of radon concentration in workplaces on the actual radon exposure during working hours. *Scientific Report*, 1–9. <https://doi.org/10.1038/s41598-021-96207-9>
- 3 Antignani, S., Venoso, G., Ampollini, M., Caprio, M., Carpentieri, C., **Di Carlo, C.**, Caccia, B., Hunter, N. & Bochicchio, F. (2020). A 10-year follow-up of yearly indoor radon measurements in homes, review of other studies and implications on lung cancer risk estimates. *Science of The Total Environment*, 762, 144150. <https://doi.org/10.1016/j.scitotenv.2020.144150>
- 4 Venoso, G., Ampollini, M., Antignani, S., Caprio, M., Carpentieri, C., **Di Carlo, C.** & Bochicchio, F. (2020). Short-Term Annual Variations of Radon Concentration in Workplaces: Some Results in a Research Institute. *Radiation Protection Dosimetry*, 1–6. <https://doi.org/10.1093/rpd/ncaa138>
- 5 Caprio, M., Venoso, G., Ampollini, M., Antignani, S., Carpentieri, C., **Di Carlo, C.**, Pozzi, S., Carelli, V., Cordedda, C., Bottacchiari, F. & Bochicchio, F. (2020). Evaluation of Representativeness of Samples used for Indoor Radon Surveys. *Radiation Protection Dosimetry*, 1–4. <https://doi.org/10.1093/rpd/ncaa135>
- 6 Curguz, Z., Venoso, G., Zunic, Z. S., Mirjanic, D., Ampollini, M., Carpentieri, C., **Di Carlo, C.**, Caprio, M., Alavantic, D., Kolarz, P., Stojanovska, Z., Antignani, S. & Bochicchio, F. (2020). Spatial Variability of Indoor Radon Concentration in Schools: Implications on Radon Measurement Protocols. *Radiation Protection Dosimetry*, 25, 1–5. <https://doi.org/10.1093/rpd/ncaa137>
- 7 **Di Carlo, C.**, Venoso, G., Lepore, L., Ampollini, M., Carpentieri, C., Antignani, S., Caprio, M., Remetti, R. & Bochicchio, F. (2020). Reproducibility of Radon-in-Water Measurements by Emanometry Technique. *Radiation Protection Dosimetry*, 1–5. <https://doi.org/10.1093/rpd/ncaa142>
- 8 Bochicchio, F., Ampollini, M., Antignani, S., Caccia, B., Caprio, M., Carpentieri, C., **Di Carlo, C.**, Nuccetelli, C., Pozzi, S., Valentini, S. & Venoso, G. (2020). A short summary of past and recent activities on protection from radon exposure carried out by the Italian National Institute of Health. *Contemporary Materials*, 11(1), 1–8. <https://doi.org/10.7251/COMEN2001001B>
- 9 Colenghi, V., Lepore, L., **Di Carlo, C.**, Bochicchio, F. & Remetti, R. (2020). Development of an electrostatic precipitator prototype to reduce exposure to radon progeny in poorly ventilated workplaces. *Journal of Radiation Research and Applied Sciences*. <https://doi.org/10.1080/16878507.2020.1838039>
- 10 Pugliese, M., Nuccetelli, C., Trotti, F., Bucci, S., Pinto, I., La Verde, G., Venoso, G., **Di Carlo, C.**, Caldognetto, E., Ugolini, R., Leonardi, F., Luzzi, L. & Trevisi, R. (2020). Protocols and computational methods to support stakeholders of NORM-related industrial sectors in Italy: a research project. *Book of abstracts 2nd ENA Workshop*.
- 11 **Di Carlo, C.**, Lepore, L., Venoso, G., Ampollini, M., Carpentieri, C., Tannino, A., Ragno, E., Magliano, A., D’Amario, C., Remetti, R. & Bochicchio, F. (2019). Radon concentration in self-bottled mineral spring waters as a possible public health issue. *Scientific Reports*, 9(1), 14252. <https://doi.org/10.1038/s41598-019-50472-x>
- 12 Bochicchio, F., Ampollini, M., Antignani, S., Carpentieri, M., C. Caprio, Caccia, B., **Di Carlo, C.**, Pozzi, S., Valentini, S. & Venoso, G. (2019). Protection from radon in Italy: past, present and perspectives. *Romanian Journal of Physics*, 64(9-10).
- 13 Bochicchio, F., **Di Carlo, C.**, Ampollini, M., Caccia, B., Carpentieri, C., Pozzi, S. & Venoso, G. (2019). Extreme reverse seasonal variations of indoor radon concentration: a case study. *Book of Abstracts 3rd International Conference “Radon in the Environment 2019” 27-31 May 2019, Kraków, Poland*, 17.
- 14 Caprio, M., Venoso, G., Antignani, S., Ampollini, M., Carpentieri, C., **Di Carlo, C.**, Carelli, V., Cordedda, C., Bottacchiari, F. & Bochicchio, F. (2019). Evaluation of representativeness of samples used for indoor radon surveys. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 19.

- 15 Carpentieri, C., **Di Carlo, C.**, Venoso, G., Ampollini, M., Bonifazi, S., Dante, V., Petetti, E., Pozzi, S., Valentini, S., Caccia, B. & Bochicchio, F. (2019). Radon mitigation actions in large public buildings: some review and a case study. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 78.
- 16 Centomani, G., **Di Carlo, C.**, Lepore, L. & Remetti, R. (2019). Design and commissioning of an innovative radon chamber with a single  $^{226}\text{Ra}$  source and continuous variation and control of concentration vs. time. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 940(June), 109–115.  
<https://doi.org/10.1016/j.nima.2019.05.084>
- 17 **Di Carlo, C.**, Lepore, L., Venoso, G., Ampollini, M., Carpentieri, C., Tannino, A., Ragno, E., Magliano, A., Remetti, R. & Bochicchio, F. (2019). First survey on radon concentration in mineral spring waters in Lazio region, Italy. *Book of abstracts 3rd international conference "Radon in the environment 2019" 27-31 May 2019, Kraków, Poland*, 72.
- 18 **Di Carlo, C.**, Lepore, L., Gugliermetti, L. & Remetti, R. (2019). An Inexpensive and Continuous Radon Progeny Detector for Indoor Air-Quality Monitoring. *WIT Transactions on Ecology and the Environment*, 236, 325–334.  
<https://doi.org/10.2495/air190321>
- 19 **Di Carlo, C.**, Remetti, R., Leonardi, F., Trevisi, R., Lepore, L. & Ippolito, R. (2019). Indoor Radon Survey in University Buildings: a Case Study of Sapienza – University of Rome. *WIT Transactions on Ecology and the Environment*, 236, 317–324.  
<https://doi.org/10.2495/air190311>
- 20 **Di Carlo, C.**, Venoso, G., Ampollini, M., Caccia, B., Carpentieri, C., Pozzi, S. & Bochicchio, F. (2019). Variazioni stagionali inverse della concentrazione di radon indoor e relativo impatto sui protocolli di misura. *Atti "Convegno Nazionale Airp di Radioprotezione 2019" Perugia, 16-18 Ottobre 2019*, 442–452.
- 21 **Di Carlo, C.**, Venoso, G., Ampollini, M., Carpentieri, C., Caprio, M. & Bochicchio, F. (2019). Thoron interference in radon measurements for different radon monitors: results and proposal for an estimation method. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 35.
- 22 **Di Carlo, C.**, Venoso, G., Lepore, L., Ampollini, M., Carpentieri, C., Pozzi, S., Caprio, M., Remetti, R. & Bochicchio, F. (2019). Reproducibility of radon-in-water measurements by emanometry technique. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 56.
- 23 Venoso, G., Ampollini, M., Antignani, S., Caprio, M., Carpentieri, C., **Di Carlo, C.** & Bochicchio, F. (2019). Annual variations of indoor radon concentration in workplaces: some results and implications on protocols. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 26.
- 24 Venoso, G., Ampollini, M., Carpentieri, C., **Di Carlo, C.** & Bochicchio, F. (2019). Experimental evaluation of ageing and fading effects over 3, 6, and 12 months for three radon concentration measurement techniques based on nuclear track detectors. *Book of Abstracts 3rd International Conference "Radon in the Environment 2019" 27-31 May 2019, Kraków, Poland*, 20.
- 25 Venoso, G., Ampollini, M., **Di Carlo, C.**, Carpentieri, C. & Bochicchio, F. (2019). Some practical improvements of radon concentration measurement protocols to reduce costs and environmental impact. *Romanian Journal of Physics*, 64(7-8), 8–13.
- 26 Venoso, G., Curguz, Z., Zunic, Z., Mirjanic, D., Ampollini, M., Carpentieri, C., **Di Carlo, C.**, Caprio, M., Alavantic, D., Kolarz, P., Stojanovska, Z., Antignani, S. & Bochicchio, F. (2019). Spatial variability of indoor radon concentration in schools: implications on radon measurement protocols. *Book of abstracts 9th International Conference on Protection against Radon at Home and at Work 16-20 September 2019, Prague, Czech Republic*, 32.
- 27 Venoso, G., **Di Carlo, C.**, Ampollini, M., Antignani, S., Carpentieri, C., Caprio, M. & Bochicchio, F. (2019). Impatto della presenza di thoron sulle prestazioni dei monitor attivi per la misura della concentrazione di radon in continuo. *Atti "Convegno Nazionale Airp di Radioprotezione 2019" Perugia, 16-18 Ottobre 2019*, 159–168.

## Books and Chapters

- 1 Cinelli, G., De Cort, M., Tollefsen, T., Achatz, M., Ajtić, J., Ballabio, C., Barnet, I., Bochicchio, F., Borelli, P., Bossew, P., Braga, R., Brattich, E., Briganti, A., Carpentieri, C., Castellani, C. M., Castelluccio, M., Chiaberto, E., Ciotoli, G., Coletti, C., ... Zhukovsky, M. (2019). *European Atlas of Natural Radiation*. Publication Office of the European Union.

## Skills

---

|               |                                                                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Languages     | Strong reading, writing and speaking competencies for English and Italian. Intermediate writing and speaking, and strong reading competencies for Spanish. |
| Coding        | Python, MATLAB, Visual Basic, C++, $\LaTeX$ .                                                                                                              |
| Simulation    | RESRAD ONSITE, OFFSITE, BUILD & BIOTA, Monte Carlo N-Particle Transport Code.                                                                              |
| 3D Modelling  | Autodesk <sup>TM</sup> -AutoCAD, SOLIDWORKS.                                                                                                               |
| Image & Video | Adobe Photoshop, Adobe Premiere, MAGIX, Sony Vegas Pro.                                                                                                    |
| Misc.         | Academic research, teaching, training, consultation, $\LaTeX$ typesetting and publishing.                                                                  |