

# Context

- [2017 - 2021] **DEMETRA project**

- 20 keuro Seed grant of INFN: L. Cardani, M. Vignati (Sapienza), I. Pop (Karlsruhe Institute of Technology)
- Proved that reducing radioactivity is beneficial for superconducting circuits operated in the quantum regime

- [2020 - 2025] **SQMS center**

- One of five DOE centers, funded with 115 M\$ and led by A. Grassellino at Fermilab
- Tasks of RM group in the “Table of deliverables”:
  - ✓ Quantifying sources of radioactivity: <https://doi.org/10.1140/epjc/s10052-023-11199-2>
  - ✓ Underground tests of SQMS prototypes (paper in preparation, Ambra’s talk)



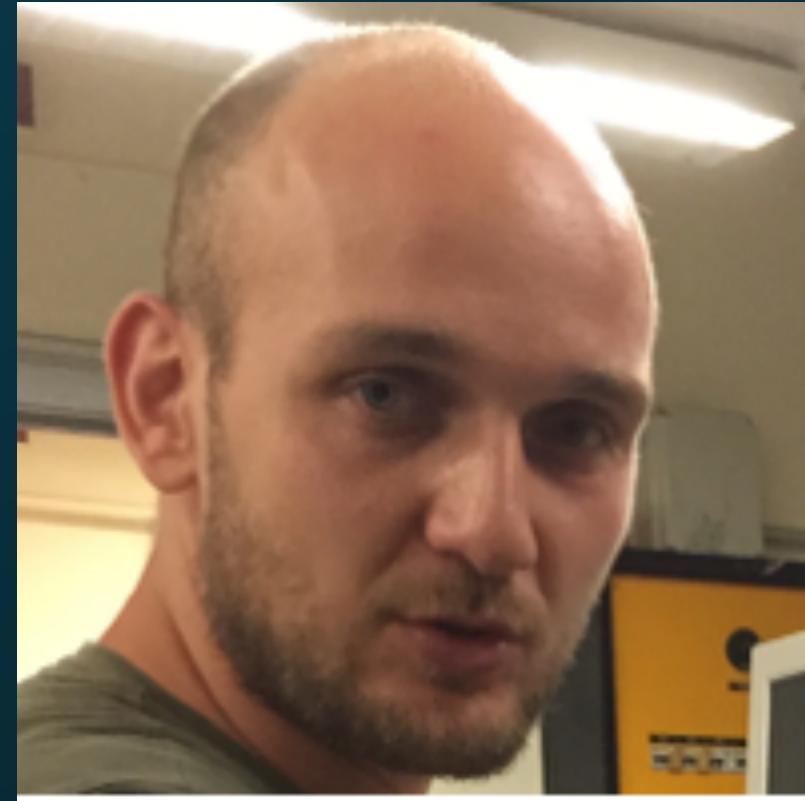
# Roma "Group" [=authors of papers]



L. Cardani



N. Casali



I. Colantoni



A. Cruciani



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A. Mariani



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V. Pettinacci



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# What Next

- Our tasks within SQMS are successfully concluded but we were asked additional support for
  - *Round Robin* project
  - Characterising effect of different coatings, materials and traps on qubits
- What next?
  - The majority of groups is still focussing on the mechanisms relating radioactivity to qubits
  - Another, intriguing direction is sensing

# What Next (2)

- We investigated the possibility of a gr5 CALL within INFN
- Roma, LNGS/GSSI, Uni Trento, FBK “officially” involved (= FTE) + SQMS center ready to sign an agreement for the production of samples + many expressions of interest
  - Our \$ requests were pretty small (~0.5 M)
  - In parallel, SQMS volunteered to support the full project within its renewal (2025 - 2030). No official agreement until the renewal is possible
  - Some funds (mainly for equipment and consumables, but limited travel support is available) are already available from external projects and from SQMS itself
- We decided (in agreement with Quaranta) to see how SQMS funding evolves and, if everything goes bad, reconsider the call in the next years



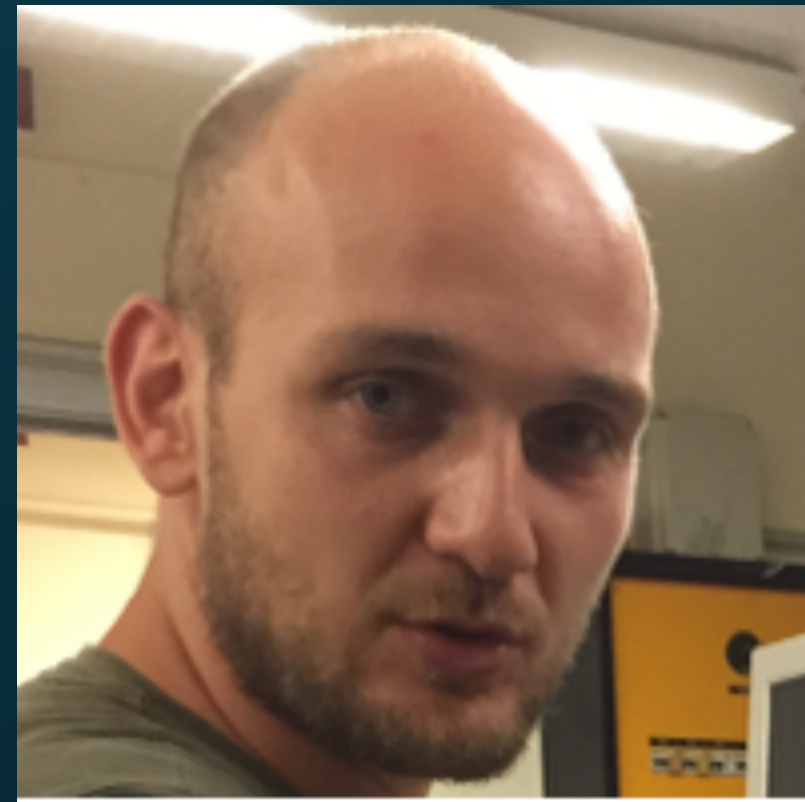
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+ interest from F. Bellini (ULTRA Lab), A. Esposito (theory), S. Milana (engineering), C.M. Terracciano (G4CPM)



# Today

- We investigated the possibility of a gr5 CALL within INFN
- Roma, LNGS/GSSI, Uni Trento, FBK “officially” involved (= FTE) + SQMS center ready to sign an agreement for the production of samples + many expressions of interest
  - First discussion to have everyone on the same page
  - See how each group can contribute to the effort
  - Set the basis to start working together from September

# What Next

- Other sources of funding and synergies:
  - PRIN-2020 (S. Di Domizio, L. Cardani, L. Gironi, A.Puiu): bolometers + qubits
  - PRIN-2022 (L. Cardani, C. Braggio, I. Colantoni): quantum devices and axions
  - MAECI 2023 (L. Cardani, A. Grassellino)
  - 2024 Grant INFN-CNS5 *ACE-SuperQ* (PI: A. Mariani)