



Presentation of Electrotechnics and Accelerator Technologies Curriculum

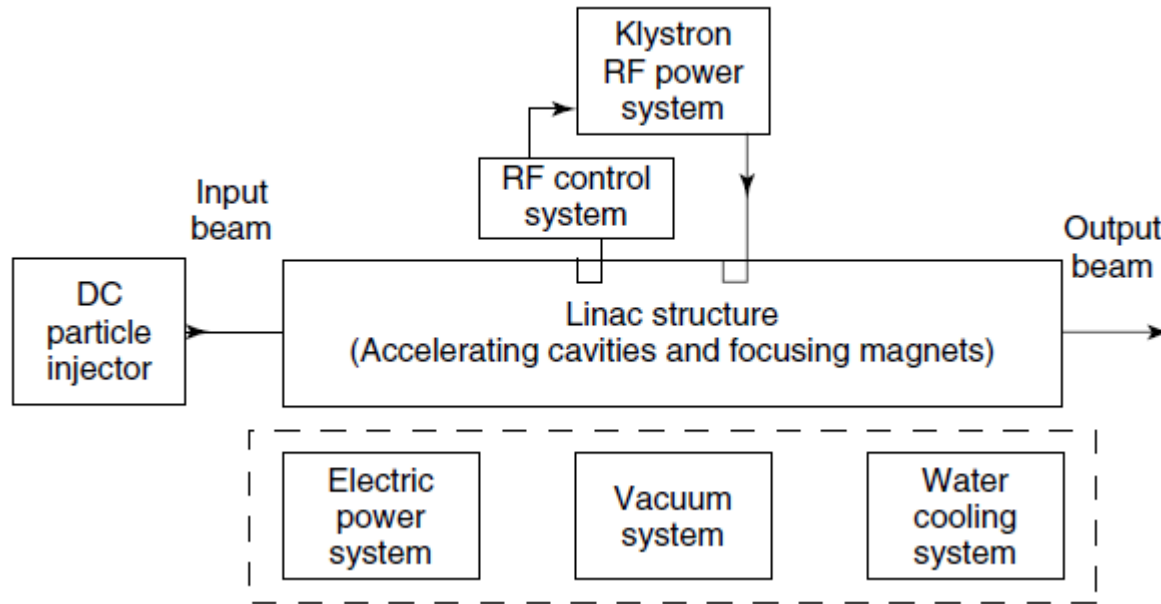
Mauro Migliorati (Sapienza, University of Rome)

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Contents

Technologies applied to the creation of extremely intense electromagnetic fields for accelerators, which include

- Electromagnets
- Radio Frequency (RF) cavities, operating in particular in a regime of Superconductivity (SC)
- RF systems
- Magnets and high-performance power systems



Involved Expertise

- Power Electronics
- Magnet Technology
- Material Science
- Mechanical and Thermal Engineering
- SC Technology (i.e. Cryogenics)
- Vacuum Technology
- RF and Microwave
- Software Engineering
- Control System and LLRF (Low Level RF)
- Accelerator Physics (Beam Dynamics, Collective Effects, Plasma Physics, Electrodynamics)
- Project Management and System Engineering

Students from previous cycles

Cycle 39°

Gaurav Rajesh Mota - *“Surface impedance of superconductors under conditions of interest for fundamental physics: measurements and methods”*

Students of the 41° cycle

Margherita Morriello - *Development of HTS Dipole Magnets for the FCC-hh Collider* – INFN Milano LASA

Matteo Lazzari - *Development of next-generation thin film SRF cavities in Nb₃Sn on Cu* – Zanon Research

Cavity prototype for operation at 4K with Q_0 equal to the 2K Nb one (Supervisor Cristian Pira)

Educational Offer A.Y. 2025/26

- **Advanced scientific programming in Matlab** (Prof. Paolo Bardella; Prof. Stefano Scialò – Politecnico di Torino)
- **Coupled electrical-thermal-structural Finite Element Analyses** (Prof. Giovanni Meneghetti; Prof. Mattia Manzolaro; Prof. Michele Ballan – University of Padua)
- **Metal Additive Manufacturing** (Dott. Pietro Rebesan – INFN Padua)
- **Fundamentals of system engineering and project management for large scientific projects** (Dott. Marco Xompero; Dott. Runa Briguglio – INAF Arcetri)
- **Applied Superconductivity: Quantum Phenomena and Quantum Systems** (Prof. Enrico Silva – University of Roma Tre)
- **Programmable System on Chip (SoC) for data acquisition and processing** (Prof. Andrea Fabbri – University of Roma Tor Vergata)
- **Collective effects in circular accelerators** (Prof. Mauro Migliorati – La Sapienza University)
- **Physics of High Brightness Accelerators** (Dott. Massimo Ferrario – INFN Frascati)
- **Physics, Technology and Applications of Linear Accelerators** (Dott. David Alesini – INFN Frascati)
- **Joint University Accelerator School JUAS 2026 ESI, Archamps (France)**

Course 1 (12 Jan → 13 Feb 2026)

Course 2 (16 Feb → 20 Mar 2026)

<https://esi-archamps.eu/juas-presentation/>