

LEVERATTO Alessandro,

Positions:

- Technologist lev. III (permanent position) at Consiglio Nazionale delle Ricerche (CNR) - SuPerconducting and other INnovative materials and devices (SPIN) institute: 2019 – on;
- Technologist lev. III TD (fixed –term) at Consiglio Nazionale delle Ricerche (CNR) - SuPerconducting and other INnovative materials and devices (SPIN) institute: 2017 – 2018;
- Research Fellow (Post-doc) at CNR-SPIN: 2015-2017;
- Occasional self-employment contract, post Laurea at CNR-SPIN for the Implementation of a software for image analysis RHEED using LabView environment that allows to monitor the intensity of the diffraction pattern in time in order to optimize the in-situ analysis of the growth of thin films: 12/11/2011 - 12/01/2012;
- Scientific Advisor, post laurea at CNR-SPIN for Electric and thermal transport measurements in ZnO/ZnMgO 2D system in Nijmegen (The Netherlands) at HMFL (High Magnetic Field Laboratory): 01/10/2011 - 04/12/2011;
- Stage at Physics Dept., University of Genoa in Atomic Force Microscopy measurements: contact, tapping, Kelvin Probe: 01/01/2007 - 30/06/2007.

Education:

- PhD in MATERIAL SCIENCE AND TECHNOLOGY (Thesis defense 10/02/2015), Quantum Transport in ZnO Based Heterosrtucture, Physics Dept., University of Genoa;
- Master's Degree in Physics 104/110 in 2011, Quantum Effects in ZnO/(Zn, Mg)O Heterostructures - experimental physics, Physics Dept., University of Genoa;
- Bachelor's Degree in Physics 101/110 in 2007, AFM Potentiometry on Zinc Oxide Based Field Effect Devices - experimental physics, Physics Dept., University of Genoa.

Main activities:

PI

- Future Circular Collider (FCC) Beam Mitigation Study Project (with CERN - S. Calatroni), electrodeposition of TI-based cuprate: 2021 – on;

PARTICIPANT

- Future Circular Collider (FCC) Beam Mitigation Study Project (with CERN - S. Calatroni), electrodeposition of TI-based cuprate: 2017 – 2019;
- FCC Study Collaboration Project (with CERN - A. Ballarino, S. Hopkins), development of superconducting materials for applications: 06/2016 – 9/2019;
- EUROFUSION Project (with Atominstitut and TU Wien - PI Prof. M. Eisterer) 2016 – 2018;
- Transport measurements (critical current as a function of temperature and magnetic field) within a contract between CNR-SPIN and the company Columbus Superconductors SpA to test their wires in our measurement facility: 2015 – on;

### Brief summary of my recent research activity:

Thanks to the expertise acquired in electric transport measurement in magnetic field and low temperature in my PhD I began to measure superconducting wires and tapes. In particular on MgB<sub>2</sub>, Bi-2212 and on iron based superconductors (IBS). I worked mainly with Dr. A. Malagoli for MgB<sub>2</sub> and Bi-2212, where in the latter, I also prepared the wire itself. The work carried out on MgB<sub>2</sub> is within a contract with Columbus Superconductors SpA. About IBS I followed a project on the preparation of tapes (Dr. A. Malagoli), I work on FeSeTe films by laser ablation on innovative bicrystal substrates (Dr. Braccini, Dr. E. Bellingeri) and also under Prof. M. Putti, I studied and measured at Nijmegen some single crystals where we observed SdH oscillations. Since 2017 I began to work on the realization of superconducting films via electrochemical deposition, now I'm developing the growth of Tl-based superconductors for the project with CERN about the realization of the beam mitigation for FCC.

### Last Oral Contributions at International Conferences:

- ASC2022 in Honolulu (Hawaii):
  - Behavior of Bi-2212 wires above liquid Helium temperature: critical current, irreversibility field and filaments coupling;
  - AC Losses in Bi-2212 GDG wires: filaments coupling behaviour;
- IEEE-TAS chapter meeting in Rome - FCC beam screen impedance mitigation: New project for assessing Tl (1223) superconducting coating feasibility;
- ASC2020 virtual conference – Transport and magnetic characterization of GDG-Bi2212 wires above 4.2 K;
- EUCAS2019 in Glasgow – Tl-1223 superconducting coatings: feasibility and perspectives;
- ASC2018 in Seattle – Thallium-1223 superconducting coatings for beam impedance mitigation in the Future Circular Collider;
- FCC2018 in Amsterdam – HTS Tl-based coatings for the FCC-hh beam screens.

### Didactic activities:

- A.A. 2022-2023: lecturer in “Physics of Materials with Laboratory” for the study course in Materials Science at the University of Genoa;
- A.A. 2021-2022: lecturer in “Physics of Materials with Laboratory” for the study course in Materials Science at the University of Genoa;
- A.A. 2020-2021: lecturer in “Physics of Materials with Laboratory” for the study course in Materials Science at the University of Genoa;
- Relator of 2 Bachelor's thesis of students in Material Science and 1 Master's thesis in Physics at Genoa University;
- Teaching activity (lectures and experiments) for stages held at the Physics Dept. in Genoa University for High School students.

### Responsibilities and licences

- Responsible (“Preposto”) for Laboratorio di Chimica (Chemistry Lab) e Laboratorio preparazione atmosfera controllata (Controlled atmosphere preparation Lab). Prot. Num. 0002672/2020: 2020 – on;
- Laser Safety Officer for the CNR-SPIN labs in Genova (prot. num.: 0005662/2016): 2016 – on;
- Toxic Materials license to purchase and use.

### Prizes and awards:

- Prizes/awards COST ACTION MP1308 - Short Term Scientific Mission (2015), Assigned by COST ACTION MP 1308 Action Chair: Dr. Fabio MILETTO GRANOZIO Action Vice Chair: Prof. Geetha

BALAKRISHNAN COST Scientific Officer: Ralph Stübner COST Administrative Officer Milena Stoyanova in 2015.

External Facilities/Laboratories/Universities experiments:

- ILL (Neutron Diffraction), 2015 and 2016;
- ESRF (Synchrotron radiation facility), 2016;
- TU Delft (CavigliaLAB – quantum and nanophysics department), 2015
- Nijmegen (EuroMagNET II – high magnetic field laboratory), 2011 and 2015

h-index: 8; 1,387 citations (Scopus)

N° pubblicazioni: 19.

Publications:

1. Meinero M., Cagliaris F., Leveratto A., Repetto L., Fujioka M., Takano Y., Zeitler U., Pallecchi I., Putti M. (2023) Magnetotransport as a probe for the interplay between Sm and Fe magnetism in SmFeAsO. *JPhys Materials* DOI 10.1088/2515-7639/aca71d
2. Armenio A.A, Leveratto A, De Marzi G, Traverso A, Bernini C, Celentano G, and Malagoli A. (2022) Investigation of transport mechanisms induced by filament-coupling bridges- network in Bi-2212 wires. *SUPERCONDUCTOR SCIENCE & TECHNOLOGY* DOI: 10.1088/1361-6668/ac45a0
3. Leveratto A, Armenio A.A, Traverso A, De Marzi G, Celentano G, and Malagoli A. (2021). Transport current and magnetization of Bi-2212 wires above liquid Helium temperature for cryogen-free applications. *SCIENTIFIC REPORTS*, vol. 11, ISSN: 20452322, doi: 10.1038/s41598-021-91222-2
4. Leveratto A, Saba A, Holleis S, Himmerlich M, Henrist B, Fernandez-Pena S, Moros A, Bernardi J, Eisterer M, Bernini C, Vaglio R, Putti M, Ferdeghini C, Calatroni S, Bellingeri E (2020). Future Circular Collider beam screen: progress on Tl-1223 HTS coating. *SUPERCONDUCTOR SCIENCE & TECHNOLOGY*, vol. 33, ISSN: 0953-2048, doi: 10.1088/1361-6668/ab7fbd
5. Sylva G, Bellingeri E, Bernini C, Celentano G, Ferdeghini C, Leveratto A, Lisitskiy M, Malagoli A, Manca N, Mancini A, Manfrinetti P, Pallecchi I, Provino A, Putti M, Vannozzi A, Braccini V (2020). The role of texturing and thickness of oxide buffer layers in the superconducting properties of Fe(Se,Te) Coated Conductors. *SUPERCONDUCTOR SCIENCE & TECHNOLOGY*, vol. 33, ISSN: 0953-2048, doi: 10.1088/1361-6668/abb35d
6. Abada A, Abbrescia M, AbdusSalam SS, Abyukhanov I, Abelleira Fernandez J, Abramov A, Aburaia M, Acar AO, Adzic PR, Agrawal P, Aguilar-Saavedra JA, Aguilera-Verdugo JJ, Aiba M, Aichinger I, Aielli G, Akay A, Akhundov A, Aksakal H, Albacete JL, Albergo S, Alekou A, Aleksa M, Aleksan R, Alemany Fernandez RM, Alexahin Y, Alia RG, Alioli S, Alipour Tehrani N, Allanach BC, Allport PP, et al. (2019). FCC-hh: The Hadron Collider: Future Circular Collider Conceptual Design Report Volume 3. *THE EUROPEAN PHYSICAL JOURNAL. SPECIAL TOPICS*, vol. 228, p. 755-1107, ISSN: 1951-6355, doi: 10.1140/epjst/e2019-900087-0

7. Abada A, Abbrescia M, AbdusSalam SS, Abdyukhanov I, Abelleira Fernandez J, Abramov A, Aburaia M, Acar AO, Adzic PR, Agrawal P, Aguilar-Saavedra JA, Aguilera-Verdugo JJ, Aiba M, Aichinger I, Aielli G, Akay A, Akhundov A, Aksakal H, Albacete JL, Albergo S, Alekou A, Aleksa M, Aleksan R, Alemany Fernandez RM, Alexahin Y, Alia RG, Alioli S, Alipour Tehrani N, Allanach BC, Allport PP, et al. (2019). HE-LHC: The High-Energy Large Hadron Collider Future Circular Collider Conceptual Design Report Volume 4. THE EUROPEAN PHYSICAL JOURNAL. SPECIAL TOPICS, vol. 228, p. 1109-1382, ISSN: 1951-6355, doi: 10.1140/epjst/e2019-900088-6
8. Abada A, Abbrescia M, AbdusSalam SS, Abdyukhanov I, Fernandez JA, Abramov A, Aburaia M, Acar AO, Adzic PR, Agrawal P, Aguilar-Saavedra JA, Aguilera-Verdugo JJ, Aiba M, Aichinger I, Aielli G, Akay A, Akhundov A, Aksakal H, Albacete JL, Albergo S, Alekou A, Aleksa M, Aleksan R, Fernandez RMA, Alexahin Y, Alia RG, Alioli S, Tehrani NA, Allanach BC, Allport PP, et al. (2019). FCC Physics Opportunities: Future Circular Collider Conceptual Design Report Volume 1. THE EUROPEAN PHYSICAL JOURNAL. C, PARTICLES AND FIELDS, vol. 79, ISSN: 1434-6044, doi: 10.1140/epjc/s10052-019-6904-3
9. Abada A, Abbrescia M, AbdusSalam SS, Abdyukhanov I, Fernandez JA, Abramov A, Aburaia M, Acar AO, Adzic PR, Agrawal P, Aguilar-Saavedra JA, Aguilera-Verdugo JJ, Aiba M, Aichinger I, Aielli G, Akay A, Akhundov A, Aksakal H, Albacete JL, Albergo S, Alekou A, Aleksa M, Aleksan R, Fernandez RMA, Alexahin Y, Alia RG, Alioli S, Tehrani NA, Allanach BC, Allport PP, et al. (2019). FCC-ee: The Lepton Collider: Future Circular Collider Conceptual Design Report Volume 2. THE EUROPEAN PHYSICAL JOURNAL. SPECIAL TOPICS, vol. 228, p. 261-623, ISSN: 1951-6355, doi: 10.1140/epjst/e2019-900045-4
10. Bellingeri E., Rusponi S., Lehnert A., Brune H., Nolting F., Leveratto A., Plaza, A., Marre D. (2019). Influence of free charge carrier density on the magnetic behavior of (Zn,Co)O thin film studied by Field Effect modulation of magnetotransport. SCIENTIFIC REPORTS, vol. 9, fasc.1, Article number 149, p. 1-12, ISSN: 2045-2322, doi: 10.1038/s41598-018-36336-w
11. Leoncino L, Celentano G, Chiarelli S, Leveratto A, Putti M, Ferdeghini C, Ballarino A, Hopkins SC, Malagoli A (2019). Evidence for Longitudinal Homogeneity and No J(e) Degradation in Bi-2212 Wires Realized by the GDG Process. IEEE TRANSACTIONS ON APPLIED SUPERCONDUCTIVITY, vol. 29, ISSN: 1051-8223, doi: 10.1109/TASC.2019.2895215
12. Martinelli A, Bellingeri E, Leveratto A, Leoncino L, Ritter C, Malagoli A (2018). In situ x-ray and neutron diffraction investigation of Bi-2212 in multifilamentary wires during thermal treatment. PHYSICAL REVIEW MATERIALS, vol. 2, ISSN: 2475-9953, doi: 10.1103/PhysRevMaterials.2.084801
13. Cagliaris F, Leveratto A, Pallecchi I, Bernardini F, Fujioka M, Takano Y, Repetto L, Jost A, Zeitler U, Putti M (2017). Quantum oscillations in the SmFeAsO parent compound and superconducting SmFeAs(O,F). PHYSICAL REVIEW. B, vol. 96, ISSN: 2469-9950, doi: 10.1103/PhysRevB.96.104508
14. Leveratto A, Zunino V, Pallecchi I, Braccini V, Ferdeghini C, Malagoli A (2017). Measurements of Magnetic Field and Temperature Dependence of the Critical Current in Bi-2212 Superconducting Wires. IEEE TRANSACTIONS ON APPLIED SUPERCONDUCTIVITY, vol. 27, ISSN: 1051-8223, doi: 10.1109/TASC.2017.2649941

15. Pallecchi I, Leveratto A, Braccini V, Zunino V, Malagoli A (2017). Investigation of inter-grain critical current density in Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>+infinity superconducting wires and its relationship with the heat treatment protocol. SUPERCONDUCTOR SCIENCE & TECHNOLOGY, vol. 30, ISSN: 0953-2048, doi: 10.1088/1361-6668/aa77e6
16. Sarnelli E, Nappi C, Camerlingo C, Enrico E, Bellingeri E, Kawale S, Braccini V, Leveratto A, Ferdeghini C (2017). Properties of Fe(Se, Te) Bicrystal Grain Boundary Junctions, SQUIDs, and Nanostrips. IEEE TRANSACTIONS ON APPLIED SUPERCONDUCTIVITY, vol. 27, ISSN: 1051-8223, doi: 10.1109/TASC.2016.2636248
17. Sarnelli E, Nappi C, Leveratto A, Bellingeri E, Braccini V, Ferdeghini C (2017). Fe(Se,Te) superconducting quantum interference devices. SUPERCONDUCTOR SCIENCE & TECHNOLOGY, vol. 30, ISSN: 0953-2048, doi: 10.1088/1361-6668/aa6a84
18. Sarnelli E, Nappi C, Enrico E, Bellingeri E, Braccini V, Leveratto A, Ferdeghini C Fabrication and characterization of Fe(Se,Te) Josephson devices and nanostrips  
Book Series: IEEE International Superconductive Electronics Conference
19. Leveratto A, Braccini V, Contarino D, Ferdeghini C, Malagoli A (2016). New concept for the development of Bi-2212 wires for high-field applications. SUPERCONDUCTOR SCIENCE & TECHNOLOGY, vol. 29, ISSN: 0953-2048, doi: 10.1088/0953-2048/29/4/045005

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