



# WP6: Training

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# TRAINING in EASITrain

The training took place in different ways:

- Local training at the centers / universities that have enrolled the ESRs;
- Through secondements that allowed an exchange and a direct interaction of the ESRs among themselves;
- Through organized events.

# The main TRAINING events

-  EASITrain lectures at CERN March 2018
-  EASISchool 1 in Vienna September 2018
-  EASISchool 2 in CEA Saclay and Grenoble -  
September 2019
-  EASISchool 3 in Genova October 2020
-  Student Workshop in Genova October 2020
-  Proposal Writing & Horizon Europe online February  
2021

# EASITrain lectures

## CERN 5-23 March 2018



### • Safety Training

- Cryogenic Safety Fundamentals
- Fire Extinguisher and risk analysis
- Ionising Radiation
- General electrical risks
- Radiofrequency
- Magnetic fields
- Chemicals

### • Software tools Training

- SHAREPOINT
- INDICO/VIDYO

### • Diversity at work and gender equality

### • Introduction to:

- superconducting wires, cables and magnet
- Magnet Testing
- Surface treatment, chemistry, and coating with sputtering
- Manufacturing and fabrication techniques

### • Project Management

# EASISchool 1

Wien 30 August to 14 September 2018

**Organizers:** Michael Eisterer, Peter Keinz,



**43 participants (15 ESRs + 28 external students)**

# EASISchool 1: Program

## First WEEK

- Introduction to superconductivity & Fundamentals
- Technological superconductors:
  - LTS (NbT, Nb<sub>3</sub>Sn)
  - Iron-based and MgB<sub>2</sub> superconductors
  - HTS
  - Wires and tapes (Nb<sub>3</sub>Sn, MgB<sub>2</sub>, HTS)
- Characterization techniques
  - Microstructural characterization
  - Mechanical properties & AC losses
- Superconducting applications
  - Superconducting devices/motors
  - Superconducting magnets for accelerators&fusion
  - Superconductivity in electronics
- Visit of the Vienna MedAustron
- Visit of the Atominstitut

*Nuclear reactor*



*ion-beam cancer therapy facility*



# EASISchool 1: Program

## Second WEEK

- Project Management
- Media Training and media exposure
- Management and technological competence leveraging



# EASISchool 1: List of the lecturers

- **Dr. Georg Bednorz (Nobel Laureate)**
- Dr. Amalia Ballarino (CERN)
- Prof. René Flückiger
- Dr. Carmine Senatore (University of Geneva),
- Dr. Franz Sauerzopf (TU Wien),
- Dr. Johannes Bernardi (TU Wien),
- Dr. Marina Putti (University Genoa),
- **Dr. Alexander Usoskin (Bruker),**
- Dr. Mathias Noe (KIT),
- Dr. Paul Seidel (Friedrich-Schiller University, Jena),
- Dr. Fedor Gömöry (Slovak Academy of Sciences),
- Dr. Bernhard Holzapfel (ESAS president),
- Dr. Lionel Quettier (CEA),
- Dr. Walter Fietz (KIT),
- Dr. Michael Eisterer (TU Wien),
- Dr. Martina Huemann (WU Wien),
- Dr. Markus Mooslechner (Terra Mater),
- Dr. Peter Keinz (WU Wien)





# EASISchool 2



30-09 to 4-10-2019 in two CEA sites,  
Saclay and Grenoble

**Organizers:** Bertrand Baudouy, François Millet



**34 participants (14 ESRs and 20 external students)**

# EASISchool 2: Program

## The first two days at Saclay

### Cryo-magnetism for:

- Neuroscience &
- Magnetic Resonance Imaging &
- Iseult magnet cryogenics

### Cryogenics for the Large facility:

- European XFEL (X-ray Free Electron Laser)
- accelerator cavities & European Spallation Source
- Large Hadron Collider (LHC)
- Accelerator magnets & detector magnets & International Thermonuclear Reactor (ITER)

### Cryogenics at Oxford Instrument

### Cryogenics for Liquefied Natural Gas

### Visits

- Iseult: world record magnetic field MRI magnet, at the Neuropsin Laboratory
- Accelerator Laboratories at CEA-Saclay
- Cryo-Magnetism Laboratories at CEA-Saclay

*Iseult, at the Neuropsin  
Laboratory 11,7 T MRI*



# EASISchool 2: Program

## The three days at Grenoble

- Cryogenics for space & Space mission
  - Cryogenic integration in satellites & Cryogenic motors and launch pads
  - Pulse-tube coolers for Earth Observation & Science
  - Helium Dilution coolers & Magnetic Refrigeration coolers & Turbo-Brayton coolers for space
- Helium refrigeration and liquefaction & Cryogenic storage and distribution
- Hydrogen production and distribution
- Accidental heat flux and safety design
- Visits:
  - Air Liquide Advanced Technologies factory at Grenoble
  - European Synchrotron Radiation Facility (ESRF) at Grenoble
  - European Magnetic Field Laboratory
  - Cryogenics Laboratories at CEA-Grenoble

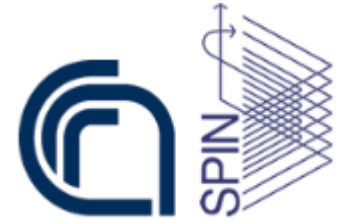
# EASISchool 2: List of the lecturers

- **Prof. Roberto Battiston, former president of the Italia Space Agency,**
- Dr. Philippe Lebrun, former head of the cryogenics at CERN, father of the LHC cryogenic system.
- **Dr. Pierre Crespi (Air Liquide), head of the Innovation Department at Air Liquide advanced Technologies (ALaT).**
- Dr. Vincent Gras (Neuropsin Lab – CEA Saclay),
- Dr. Lionel Quettier (CEA Saclay), Dr. Philippe Brédy (CEA-Saclay),
- **Dr. Arno Godeke (VARIAN),**
- Dr. Enrico Cenni (CEA-Saclay),
- Dr. Ambra Gresele (Zanon),
- Dr. Patxi Duthil (Institut de Physique Nucléaire d'Orsay - CNRS),
- **Dr. Mikael Pekeler (Research Instruments),**
- Dr. Etienne Rochepault (CEA-Saclay),
- Dr. Caroline Favre (CERN),
- Dr. Ryuji Maekawa (ITER),
- Dr. Thibault Lecrevisse (CEA-Saclay),
- **Benoit Morel (GTT),**
- Dr. Maria Barba (CEA-Saclay),
- **Dr. Ziad Melhem (Oxford Instruments),**
- Pr. Loic Quéval (Centrale-Supélec),
- Dr. Duband (CEA-Grenoble), head of the Department of Low Temperature System
- Dr. Thierry Tirolien (European Space Agency),
- Dr. Gérard Vermeulen, (Institut Néel - CNRS),
- Dr. Jean-Marc Duval (CEA-Grenoble),
- **Dr. Julien Tanchon (Absolut system),**
- **Dr. Wiertz (Air Liquide),**
- **Dr. Emmanuel Gavila (Thales Alenia Space),**
- **Dr. Davide Duri (Ariane Group),**
- **Dr. Yannick Fabre (Air Liquide),**
- **Stéphane Duval (Air Liquide),**
- **Eric Ercolani (CEA-Grenoble),**
- **Pierre Barjhoux (Air Liquide),**
- **Cecile Gondrand (Air Liquide).**

# EASISchool 3

28 Sept. to 9 Oct. 2020 in Genova at CNR-SPIN

**Organizers:** Emilio Bellingeri, Cristian Pira, Marina Putti



**41 participants** (13 ESRs and 28 external students)  
*half in presence and half remotely*

# EASISchool 3: Program

## SRF superconductivity and accelerating cavities

- Basic principles of SRF
- Cavity design - Elliptical cavities and non-elliptical Cavities
- RF Test
- QPRs and other RF and DC characterizations for R&D
- Cavities fabrication
- Pushing Nb bulk performances
- Nb thin films
- Nb<sub>3</sub>Sn and other materials beyond Nb

## Superconducting devices sensing and quantum computation

- Introduction on weak superconductivity
- Superconducting Radiation Detectors
- Superconducting Nanowire Single Photon Detectors
- SQUIDs and applications
- Superconducting electronics and spintronics
- Thermal quantum devices
- Quantum Computation

# EASISchool 3: Program

## Superconducting magnets design, modelling and realization

- Superconducting dipoles and quadrupoles for accelerators
- Large Detector Magnets Construction methods and problems of superconducting magnets
- TEST for large magnets
- NMR magnets
- MRI magnets

## ASG day



- R&inDustry: Merging Innovation, Value and Business”.
- Applications of HTS superconductors
- **Visit at Columbus Superconductors**



# EASISchool 3: List of the lecturers

- Alessandro Gaggero (CNR)
- Cristian Pira (LNL-INFN)
- Daniele Sertore (INFN Milano – LASA)
- **Davide Nardelli (Bruker BioSpin AG )**
- Erk Jensen (CERN)
- Flavio Gatti (Unige)
- Francesco Giazotto (CNR)
- Guillaume Rosaz (CERN)
- **Ivano Tavernelli (IBM) Global leader for advanced algorithms for quantum simulation.**
- Lionel Quettier (CEA)
- Luigi Muzzi (ENEA)
- Marta Bajko (CERN)
- **Matteo Alessandrini (Bruker BioSpin AG)**
- Mattia Checchin (Fermilab)
- **Mikko Kiviranta (VTT Technology Research Centre of Finland)**
- **Nicolò Valle (ASG)**
- Oliver Kugeler (Helmholtz Zentrum Berlin)
- Pasquale Fabbricatore (INFN)
- Ruggero Vaglio (University of Napoli Federico II)
- Sergio Pagano (University of Salerno)
- Stefania Farinon (INFN)
- Susana Izquierdo Bermudez (CERN)
- Walter Venturini Delsolaro (CERN)



# Student Workshop on superconductivity and application

(8 - 9 October 2020) Genova at CNR-SPIN

**Organizers:** Dorothea Fonnesu, Stewart Leith, and Jean-François Croteau.



*the recently inaugurated Genoa bridge.*

**24 participants** *(on presence/remotely)*

# Student Workshop: List of the speakers

## Three guest speakers:

- Patrizia Azzi (INFN)
- Michael Benedikt (CERN)
- Paul Libeyre (ITER)

First Name	Last Name	Speaker	Affiliation
A. Özdem	Sezgin	Yes	Universität Siegen
Aisha	Saba	Yes	CNR-SPIN
Alice	Moros	Yes	TU Wien
Andrea	Traverso	Yes	Università degli studi di Genova, INFN Genova, CNR-SPIN
Antonio	Bianchi	No	CERN
Davide	Valzani	No	Università di Padova
Dmitry	Tikhonov	Yes	HZB Berlin
Dorothea	Fonnesu	Yes	CERN
Francesco	Gava	No	Università di Padova
Giovanni	Succi	Yes	CERN
Jean-Francois	Croteau	Yes	I-Cube Research
Johannes	Gnilsen	Yes	Bruker
Jordan	Walker	No	CERN
Lorena	Vega Cid	Yes	Centro de Investigaciones Energéticas Medioambientales y Tecno
Lorenzo	Ferrari Barusso	Yes	INFN
Matteo	Zanierato	No	INFN LNL, università di Padova
Maxime	Podeur	Yes	University of Stuttgart
Pablo	Vidal Garcia	Yes	CERN
Paola Estefania	Mauceri Barrios	Yes	ASG Superconductors
Sara Pinki	Ranieri	No	Unipd
Sofiya	Savelyeva	Yes	Technische Universität Dresden
Stewart Bristow	Leith	Yes	Universität Siegen
Tommaso	Favero	No	Università di Padova
Vanessa	Garcia Diaz	Yes	INFN-LNL, Università degli Studi di Fe

# Training on Proposal Writing & Horizon Europe

## 1 and 2 February 2021 online

**Organizer:** european\_fund\_management\_consulting



**19 participants (ESR+supervisors)**

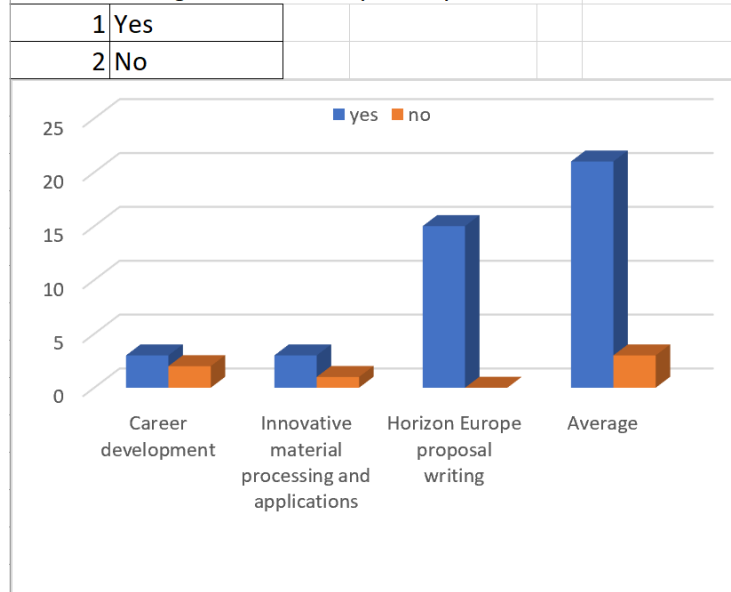
# Proposal Writing & Horizon Europe

## Topics:

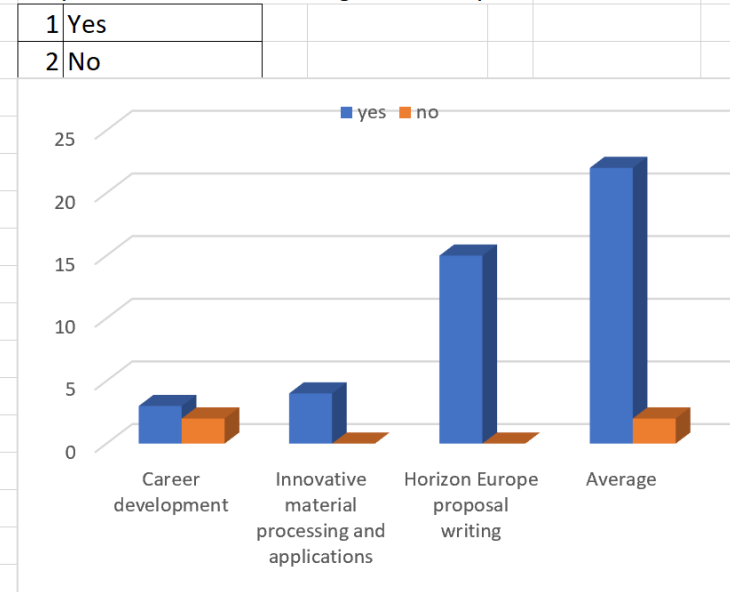
- Career development
- Innovative material processing and applications
- Horizon Europe proposal writing

## Survey:






Did the training content meet your expectations?



Do you consider this training useful for you?



# Acknowledgements

-  All the organizers
-  All the lecturers
-  Anna Yaneva (Ani)
-  Johannes Gutleber
-  Panagiotis Charitos (Panos)