CENTRO FERMI
Museo Storico della Fisica e
Centro Studi e Ricerche Enrico Fermi

Italian physicists between scientific research and public engagement:
from the Congress of Vienna to the rise of the Republic

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Place of Work & Collaborations:

Place of work: University of Genova, University of Turin, Sapienza University of Rome, University of Parma, Senate of the Republic Historical Archives

Collaborations: E. Campochiaro, E. Lantero, Senate of the Republic Historical Archives

Project main goal and results so far achieved

The purpose of this project is to provide a historical reconstruction of the scientific research and civil commitment of Italian physicists between 1815 and 1943.

In 2016 the project addressed the following issues:

- **Physicists and the Risorgimento**: it was studied the scientific activity and the political commitment of **Macedonio Melloni**, in the more general framework of the Italian **Risorgimento**. [1], [5], [6], [7]
- **Physicists and the Great War**: it was analyzed how physicists like G. Marconi, V. Volterra, A. Garbasso, P. Cardani, A. Lo Surdo, A. Occhialini **scientifically contributed to the Great War effort**. [2], [8], [9], [11]
- **The civil commitment of Physicists**: it was explored **Ettore Majorana**'s activity on aspects concerning the scientific method and his attempt to extend it to fields of research outside physics. [3], [12]

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• **"Senators-Physicists":** it was analyzed the scientific and political activity of physicists and astronomers **appointed by the King senators for life**, from the Charter of Carlo Alberto (Statuto Albertino) to the fall of fascism (1848-1943)

It was concluded the research and analysis of the Parliamentary Records of the Senate of the Kingdom and the writing of a **books on this subject** is nearing completion. On the various phases of this issue see. [10]

• Another activity connected with the project was the presentation of the **exhibition** "*Enrico Fermi – una duplice genialità tra teorie ed esperimenti*", designed by Luisa Cifarelli and organized by Centro Fermi, inaugurated during the **Festival della Scienza (Genova 2015)** and soon transferred at Centro Fermi. [4]

Publications (2016)

[1] Colombi E, Leone M, Robotti N (2016). The emergence of Melloni's optical bench. Eur. J. Phys. 38, 015802. doi:10.1088/0143-0807/38/1/015802

[2] Colombi E, Leone M, Robotti N (2016). Physicists and the Great War: an historical-didactical exhibition, in HOPE Annual Forum 2016: Physics Teaching in Europe and HOPE in Perspective, Université Pierre et Marie Curie, Paris, p. 40. ISBN: 978-2-9554388-2-4, EAN 9782955438824

[3] Guerra F, Robotti N. (2016) Majorana Memorandum. Edizioni Istituto Luce Cinecittà, Roma.

[4] Guerra F, Robotti N (2016). Enrico Fermi - Una duplice genialità tra teorie ed esperimenti. Giornale di Fisica LVII, 3-26.

[5] Tarricone L, Colombi E (a cura di) (2016). Melloni Day. Giornata commemorativa dello scienziato parmense. Edigraphital, Parma. ISBN: 978-8-894068474

[6] Robotti N (2016). I Fisici nel Risorgimento. In: Melloni Day, cit.[5], p. 37-51.

[7] Colombi E (2016). Macedonio Melloni: patriota e scienziato. In: Melloni Day, cit [5] p. 53-69.

[8] Colombi E, Leone M, Robotti N (in stampa). Cardani e la fonotelemetria: 1915-1918. In: La Fisica nella Scuola.

[9] Robotti N (2016). I Fisici e la Grande Guerra: 1915-1918, in G.B. Bazzi, a cura di, 102° Congresso Nazionale Società Italiana di Fisica (Padova 26-30 settembre 2016), SIF Bologna, p. 105. ISBN: 978-88-7438-106-7

[10] Leone M, Robotti N (2016). I Fisici Senatori: conclusione di un progetto, in G.B. Bazzi, a cura di, 102° Congresso Nazionale Società Italiana di Fisica (Padova 26-30 settembre 2016), SIF Bologna, p. 106. ISBN: 978-88-7438-106-7

[11] Colombi E, Leone M, Robotti N (2016). Cardani e la fisica a Parma: 1915-1918, in G.B. Bazzi, a cura di, 102° Congresso Nazionale Società Italiana di Fisica (Padova 26-30 settembre 2016), SIF Bologna, p. 106. ISBN: 978-88-7438-106-7

[12] Guerra F, Robotti N (2016). Genesi e sviluppo dell'articolo di Ettore Majorana "Atomi orientati in campo magnetico variabile", in G.B. Bazzi, a cura di, 102° Congresso Nazionale Società Italiana di Fisica (Padova 26-30 settembre 2016), SIF Bologna, p. 233-234. ISBN: 978-88-7438-106-7

Plan of activities 2017

➢ End of the research activity on the records of the **Senate of the Republic Historical Archives** and **publication by SIF, in collaboration with Centro Fermi and Senate of the Republic, of the volume:**

Scienza e impegno civile: i fisici al Senato (1848 – 1943)
(authors: M. Leone, N. Robotti)

It is expected the official presentation of the book

➢in the Senate of the Republic

➢and in occasion of the celebrations of 120 years of activities of SIF at SIF annual conference (Trento, September 2017)

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➢ Survey of the records preserved by the **Chamber of Deputies Historical Archives** and by other relevant archives, in Italy (e.g. **Lincean Academy Historical Archives**; **State Central Archives**; Archives of relevant universities) and abroad (e.g. **Archives of the Academie des Sciences** in Paris; **Segrè Archives** at University of California, Berkeley; **Nobel Archives,** Stockholm)

Plan of activities 2018

➢ identification, collection and digitization of the relevant records of the **Chamber of Deputies Historical Archives** and of the **other selected archives in Italy and abroad**

➢ analysis of the selected records within the context of a) contemporary status of the physical research in Italy and abroad, and b) contemporary institutional and political environment

➢ in occasion of the celebrations for the end of WW1 it is expected the organization of a celebration event and the publication of a monograph on the subject: **Physicists and the first world War**

Expected results (2017-2018)

➢ It is expected the publication of two papers/year on an international journal devoted to the history of science/physics and/or to the physics education/ dissemination

➢ It is also expected the dissemination of main results in scientific conferences, large circulation popular science journals and, possibly, the publication of detailed monographs

Impact of the research and outreach initiatives (2017-18)

➢ Since the project explores the commitment of Italian physicists in the political institutions of the country, its impact will be felt in the cultural heritage of our country. Also, the project has in itself the potential to contribute to the scientific education by connecting physics to society and making physics more attractive to young generations (i.e. one of the societal challenges tackled by Horizon 2020)

➢ Expected outreach initiatives are: thematic exhibitions on the public engagement of physicists; public lectures (e.g. during science fairs), school presentations in secondary schools, lectures for school teachers and students during exhibitions and orientation meetings, **collaboration to the organization of exhibits on specific themes, at the Centro Fermi**

Expected funding in the 2-year period:

- Request of funding by Centro Fermi

It is expected a funding of 30000 € (15000 € for 2017) for covering the following costs:

- travel, accommodation, meals to/from archives, libraries, conferences etc.
- conference fees
- reproduction rights
- duplication and digitization expenses
- Publication expenses

- Co-funding

Expected around 10000 Euros from University of Genova, Turin, Roma, Parma, INFN

- Potential external funding

We plan the participation, as Centro Fermi, to external funding, as the occasion arises