

38<sup>th</sup> National Congress

S.I.S.F.A.

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**The Schools of History of  
Physics as a tool for cultural  
development and  
dissemination**

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# The Schools of History of Physics...

## *Introduction*

The **Group of History of Physics** (GSdF) of the Association for the Teaching of Physics (A.I.F.) annually organizes, since 2001, a School of Formation mainly addressed to the teachers of Physics and of Mathematics and Physics in the Secondary Schools and to the interested university and PhD students.

# The Schools of History of Physics...

## *Introduction*

The History of Physics helps to highlight the relationships of Physics with the most different cultural areas. In particular, in the various editions of the School, it was outlined the centrality of the relationships with **History**, **Mathematics**, **Philosophy** and **Biology**.

# The Schools of History of Physics...

## *What is the goal?*

The Schools aim to improve Physics knowledge and to promote culture in general, according to the belief that **on the basis of ignorance and superficiality it is impossible to build and preserve a solid and widespread scientific culture and therefore the progress and the welfare of the mankind.**

# The Schools of History of Physics...

## *For a better Physics teaching*

Only a teacher well-aware of the complex interactions among the Physics knowledge and the socio-economical and cultural spheres may be able to promote in his students the idea of a Physics as **an integral part of the cultural heritage of Humanity.**

# The Schools of History of Physics...

## *For a better Physics teaching*

Supplying elements of History of Physics, it may be useful to suggest a dynamical picture of Physics, as a developing Science and **not** as a dogmatic and unchangeable structure.

# The Schools of History of Physics...

## *For a better Physics teaching*

The presentation of the **historical development of a concept**, helps the teacher to **better understand the difficulties** encountered by the students, so **tracing a path** for a possible **their overcoming**.

# The Schools of History of Physics...

## *The History of Physics as an element of scientific rationality*

The analysis of **past arguments** may suggest ideas, keys of interpretation of the “reality”, useful for the comprehension and the eventual **development or overcoming of the actual theories.**



# The Schools of History of Physics...

## *The History of Physics as an element of scientific rationality*

*The historical route of a concept or a theory problematizes and deepens its meaning and therefore improves its understanding. Paths abandoned before and then resumed in other form, suggest that nothing can be taken for granted but **everything must be analyzed and discussed without prejudice.***

# The Schools of History of Physics...

## *The History of Physics as a useful opportunity for teachers*

The Schools are characterized by a **wise connection** among the **History of Physics, disciplinary contents** and **didactics** and so represent a useful opportunity for the teachers **to rethink and deepen** their **professional competences**.

# The Schools of History of Physics...

## *Articulation of the Schools*

The duration of the Schools is of **five days** and they are **residential**.

Trainees are divided into three or four **groups** that, through afternoon meetings, discuss, under the supervision of GSdF coordinators, on subjects relevant to the School and indicated in advance in the program of the same.

# The Schools of History of Physics...

## *Articulation of the Schools*

The reading of **original memories** is central:

*“...allo scopo di far comprendere che, così come la letteratura si studia attraverso le opere degli autori che si sono distinti nei vari generi letterari, anche la scienza, essendo un prodotto della mente umana, deve essere studiata attraverso la lettura delle opere degli scienziati per capire come essi siano arrivati alle loro scoperte.”*

**C.Romagnino**, *Riflessioni sulle Scuole di Storia della Fisica in I princìpi di conservazione e le simmetrie nella Storia della fisica*, Quaderno 25 - supplemento a LfnS, gennaio-marzo 2014 , p. 152.

# The Schools of History of Physics...

## *Articulation of the Schools*

The fact that the course is **residential** promotes the exchange of experiences and the development of a climate of **cultural community** among the trainees, speakers and organizers of the School.

It is a **qualifying element** of the School that distinguishes it from other training courses.

**In the following slides the list of the titles from 2001 to 2018.**

# The Schools of History of Physics...

## *List of Schools of History of Physics*

- *La storia della scienza come base per la formazione dell'intellettuale scientifico*, Laboratori Nazionali del Gran Sasso - Assergi (AQ) , 2001
- *L'immagine fisica dell'universo da Copernico ad Einstein*, Laboratori Nazionali del Gran Sasso - Assergi (AQ), 2002
- *La storia della Teoria dei Quanti*, Domus Galileiana - Pisa, 2003.
- *Aspetti di Storia della Fisica dagli anni Trenta al secondo dopoguerra*, Salice Terme (PV), 2004.
- *Nuclei e Particelle: aspetti di Storia della Fisica*, Castello Pasquino-Castiglioncello (LI), 2005.
- *L'evoluzione del concetto di Campo dall'Ottocento ai giorni nostri*, Modena, 2006

# The Schools of History of Physics...

## *List of Schools of History of Physics*

- *Contesti teorici e scoperte sperimentali immagini della natura e modellizzazione in fisica*, Laboratori del Gran Sasso – Assergi (AQ), 2007
- *Per l'unità della scienza: fisica e biologia*, Brescia, 2008
- *Fisica e matematica: due storie intrecciate*, Ferrara, 2009
- *Figure e storie della fisica del Novecento*, Aosta, 2010
- *La dialettica continuo-discreto nella storia della fisica*, Terni, 2011.
- *I principi di conservazione e le simmetrie nella storia della fisica*, Piacenza, 2013.
- *Dal Germanio al Grafene: sulla storia della fisica della materia condensata*, Pisa, 2014.

# The Schools of History of Physics...

## *List of Schools of History of Physics*

- *Fisica e probabilità, una lunga storia*, Messina, 2015
- *Sulla Storia dell'astronomia: il Novecento. Gli strumenti, le scoperte, le teorie*, Asiago (VI), 2016
- *Relatività e fisica quantistica: un matrimonio lungo un secolo*, Cagliari, 2017
- *Il nucleo: da Rutherford ai quark, via Los Alamos*, Policoro (MT), 2018



# The Schools of History of Physics...

## *Photos from Messina School (2015)*



# The Schools of History of Physics....

## *Next School of History of Physics*

**La luce, una storia infinita**

Ferrara

25 FEBBRAIO - 1 MARZO 2018

# The Schools of History of Physics...

## *Documentation of the activities carried out*

### **Publication of Proceedings**

The Proceedings of the Schools are a supplement to *La Fisica nella Scuola* (LFnS), the quarterly review of the AIF, under the name of “Quaderno”. To date, seven Quaderni (numbers: 27, 25, 22, 21, 19, 17, 14) have been published concerning the Schools of the History of Physics.

### **The website**

Connected to the site of the AIF (<https://www.aif.it/>), there is a space dedicated to the GSdF (<http://www.lfns.it/STORIA/index.php/it/>) where to find materials and information related to the Schools of History of Physics.

# The Schools of History of Physics...

## *Bibliography*

- **Antiseri D.**, *La storia come filosofia della didattica delle scienze*, in *Antidoti alla tecnicizzazione*, Quaderno 18 - supplemento a LFnS gennaio-marzo 2007.
- **Bergia S.**, *La matematica come potente suggestione analogica*, in *Fisica e matematica: due storie intrecciate*, Quaderno 21 - supplemento a LFnS luglio-settembre 2010.
- **Fabri E.**, *Matematica e Fisica – un rapporto complesso*, in *Fisica e matematica: due storie intrecciate*, Quaderno 21 - supplemento a LFnS luglio-settembre 2010.
- **Minni F.**, *Presentazione in Dal germanio al grafene: sulla storia della fisica della materia condensata*, Quaderno 27 - supplemento a LFnS luglio-settembre 2017.
- **Romagnino C.**, *Riflessioni sulle Scuole di Storia della Fisica in I principi di conservazione e le simmetrie nella Storia della fisica*, Quaderno 25 - supplemento a LFnS gennaio-marzo 2014.
- **Vailati G.**, *Sull'importanza delle ricerche relative alla storia delle scienze in Il metodo della filosofia*, a cura di F. Rossi - Landi, Laterza, Bari 1967.

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**Many thanks for the kind  
attention!**

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