

The Hidden Force

a dialog between Physics, History and Art

a STEAM project by a STEAM team

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together with

Emiliana Losma women history expert

Rita Spada innovation expert

Elena Ruzza actress – **Fè Avouglan** soprano on stage

Gabriella Bordin director



«The documentary page hardly ever
possesses the power to restore to us
the **essence of a human being**:
to this end dramatists and poets
are more qualified than
historians and psychologists.»

PRIMO LEVI



PROJECT SEED:
Fall 2018

FULL TEAM:
Summer 2019

PRODUCTION
FUNDED:
Fall 2019

STUDIES
BRAINSTORMING
& WRITING:
ready by Summer 2020

TWO CLOSED_DOOR
PERFORMANCES
Fall 2020

PERFORMANCES
OPEN TO PUBLIC/SCHOOLS
since Fall 2021 →

@ Bologna BSMT
Tonight #16

PAPERS/ROUNDTABLES
DISCUSSIONS/INTERVIEWS
since Fall 2020

Many Women Scientists in human History

At least one to celebrate each day!

Emiliana Losma

<http://www.emilianaosma.it/blog/calendario-ginergico/>



GENNAIO



11th of February 2021
Intl. Day of Women and Girls in Science
Postage stamp to honor Chieng-Schiung Wu

Our History in Torino

August 8, 1951

Torino, Milano, Padova and Roma founded INFN



Physics Department, 1954
(credits Maria Vigone)

Casale, 1955

Nuclear emulsions on air balloon flight .
from left: Maria Vigone, G. Wataghin, R. Deaglio,
Anna Debenedetti (headphones), Carola Maria Garelli



The strong women scientist team in Torino
was named “la gruppà” by Tullio Regge

Ingredients: Passion – Physics – History

« **The profession of the researcher**
must return to its tradition of searching
for **the love of discovering new truths**,
given that in all directions we are surrounded
by the unknown and the vocation of the man
of science is to **move forward the frontiers**
of our knowledge in all directions,
not just in those that promise
more immediate rewards or applause.»

ENRICO FERMI 1947

La forza nascosta

Scienziate nella Fisica e nella Storia



- ✓ *Storytelling theatre where vocal music set the scene*
- ✓ *XXth century: great steps forward in Physics*
many disrupting events in the Society
- ✓ *4 women scientists ↔ 4 forces ↔ 4 lives*

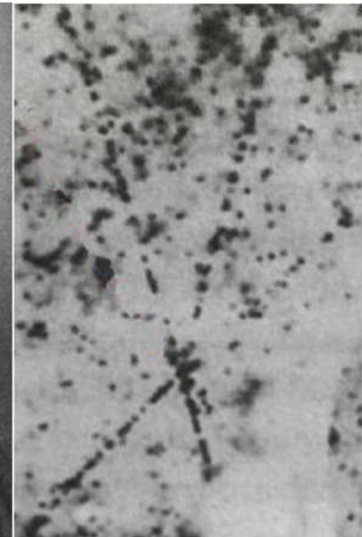


Marietta Blau

(1894-1970)



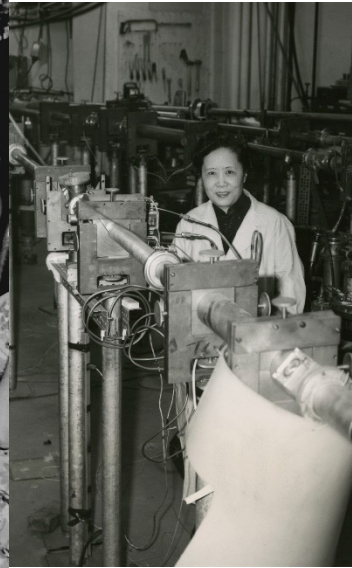
**M. Blau with
members of the
plate group
at Wien Radium
Institut
Summer 1960**



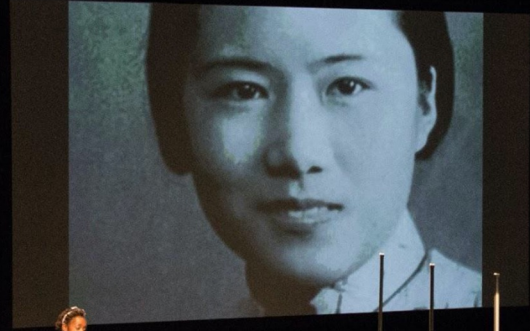


Chieng-Shiung Wu

(1912-1997)



**Emilio Segre (center),
Robert Oppenheimer
(front) and
Chien-Shiung Wu
(right)
at Berkeley's
International House
in 1939**





Milla Baldo Ceolin

(1924-2011)







Vera Cooper Rubin

(1928-2016)



Courtesy of Carnegie In

At the Lowell Observatory in 1965

*At her “measuring engine,”
to examine photographic plates, in 1974*



Photos courtesy of the Carnegie Institution for Science





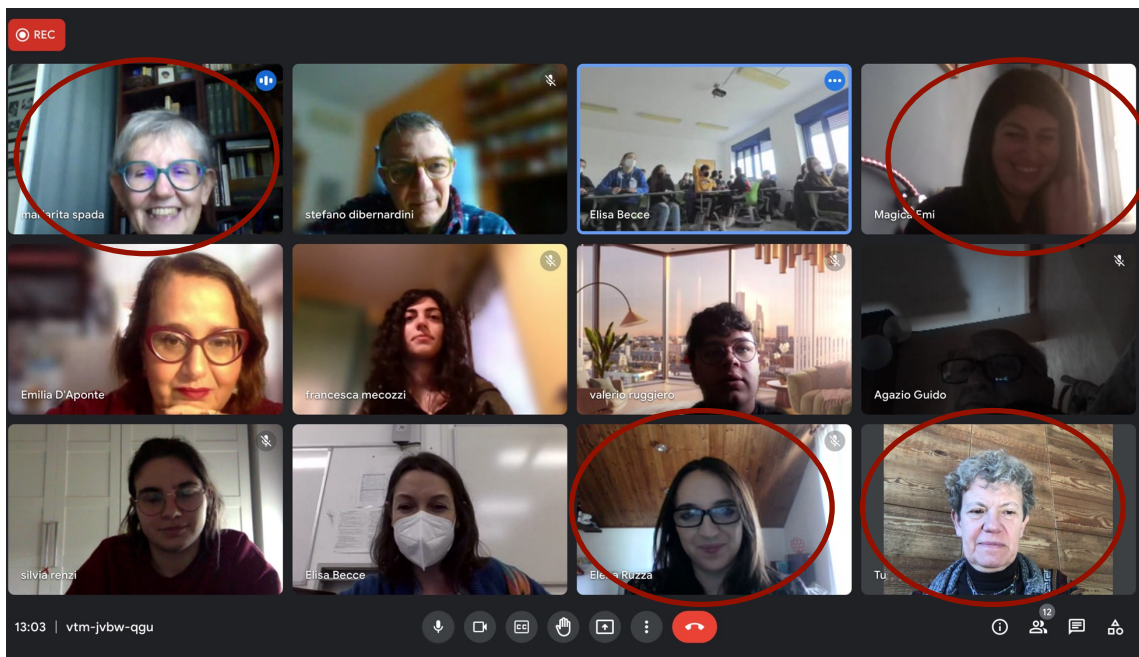
La Forza Nascosta



High school projects (1): remote discussion/interview

Unit of Educational Activity (UDA – unità didattica di apprendimento) – school project already in place: “the woman role (mainly in science) in the past century”

- Attended the performance in Roma – Auditorium della Musica Nov 26, 2021
- Remote interview to four of us with different role/competence in the project



**The students designed
and ran the interview
with interesting debate
and participation for 1.5 h
on Saturday morning**

**Liceo Scientifico Statale "Vito Volterra"
Ciampino (Roma) - remote Feb 5 2022**

High school projects (2): Interview in person

Liceo Scientifico Gobetti Torino, May 18 2022



The screenshot shows the website of Liceo Scientifico Gobetti Torino. The header is blue with the school's logo and name. Below the header is a navigation bar with links: HOME, LA SCUOLA, DIDATTICA E ATTIVITÀ, ORGANIZZAZIONE, ATTIVITÀ & EVENTI, and SEZIONE TRASPARENZA. The main content area features three promotional tiles: 'BIBIONE 2022!' with a photo of a beach event, 'CORSI DI RECUPERO ESTIVI 2022' with a cartoon boy studying, and 'NEW! CANALE YOUTUBE GOBETTI' with a photo of a classroom and the text 'NUOVO CANALE YOUTUBE IL GOBETTI INCONTRA...'. A small Gobetti logo is at the bottom right.

Canale Youtube Gobetti

Ecco l'indirizzo del canale: iscrivetevi numerosi!

<https://www.youtube.com/channel/UCdyICh5sdjCdCEISSnA3XzQ>

Terza conferenza Gobetti disponibile!



Comments and Future Prospects

- **For sure it is not simply a theatre pièce!**
- **It would have never be what it is without all the single people of the team, with so different competences and stories**
- Incredible experience: a huge amount of work/study but so much to learn about our field from different perspectives, our local, national and international history and societal/cultural interplay
- Promoting science – STEM ➔ **STEAM** – recognize the women role, their advancement in physics, the family and fathers' presence, the community
- **Important theatres/events:** 2020 – Science Festival Genova, Teatro Baretti Torino
2021 Arcetri observatory - GGI, Teatro Garybaldi and Planetarium Torino, Trento
2022 Teatro Puccini Viareggio, ...Teatro Gobetti Torino, and now Bologna!
- A few papers written (in Italian) ➔ **a publication on the project**
- **Performance in English and to bring abroad: CERN**

Le meraviglie della fisica *a Bologna*



<https://collisioni.infn.it/evento/la-forza-nascosta-le-meraviglie-di-bologna/>



8 luglio ore 21 XVI PERFORMANCE

La forza nascosta



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



ICHEP 2022
BOLOGNA



DRAMATURGY Gabriella **Bordin**, Elena **Ruzza**

ON STAGE Elena **Ruzza** actress, Fé **Avouglan** soprano

Diego **Mingolla** at the piano

ORIGINAL MUSIC Ale **Bavo**

STAGE SETTING Adriana **Zamboni**

ELEMENTS ON STAGE Silvano **Gallian**

VOICE RECORDING Matteo **Cantamessa**

VIDEO Giuseppe **Verdino**

VOCALS MUSIC Diego **Mingolla**

PHOTOGRAPHY Anna **Parisi**

DESIGN/EDITING Anna **Ceresole**, Nora **De Marco**,

Emiliana **Losma**, Simonetta **Marcello**, Nadia **Pastrone**, Rita **Spada**

DIRECTOR: Gabriella **Bordin**

PRODUCTION INFN-Torino, Dip. Fisica-UniTO, Associazione Terra Terra, Almateatro, Teatro Baretti

IN COLLABORATION with: CentroScienza Onlus, INRiM, CAEN Tools for Discovery



<http://laforzanascosta.to.infn.it/>



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[PROMO](#)