

# Giannandrea Inchingolo

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## About me:

I am a creative scientist with a Ph.D. in Physics (2020, Instituto Superior Técnico, Lisbon) and an M.Sc. in Plasma Physics (2014, University of Pisa and Rome "La Sapienza"), I started my scientific career in research, focusing on the kinetic scale effects of Astrophysics plasma, from supermassive black holes (PSFC, MIT) to radio relics acceleration mechanism (University of Bologna).

Since 2018, I start developed an interest in creative scientific visualizations for outreach activities, creating and managing the project **Turbulence | Voice of Space** as part of my Ph.D. research. In 2020 I created **Into the (un)known** a Science Art project in which I managed a multi-disciplinary collaboration between Scientists, CG artists, musicians, and writers for the production of immersive and multi-sensory exhibits for Cosmos exploration. Today, I am fully committed to public engagement and education as a Post-doc at Arcetri Astrophysics Observatory. I carry on the production of new science art visualizations and dedicate the majority of my time to Game-based learning activities. In particular, I co-designed the board game **PIXEL**, a collaboration between INAF and GSRC, and the education activities connected with this game.

I am also an **Ordinary Member of the GAME Science Research Center**, part of the "Game Design" and the "Science, Scientific Citizenship and Game" commissions.

Recently, I was selected to represent INAF as a **National Astronomy Education Coordinator** of the International Astronomic Union, supporting Italian activities of the Office of Astronomy for Education (OAE).

## ● WORK EXPERIENCE

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26 JUN 2022 – CURRENT Florence, Italy

### **POST-DOCTORAL FELLOW** INAF - ARCETRI ASTROPHYSICS OBSERVATORY

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As part of the local Outreach and Education team, I contribute to the organization and realization of local activities like school visits to the Institute, high school education process, game-based learning in schools and public events. In particular:

1. Support the national WG in Tinkering, game and creative learning for the production of PIXEL and its use for high school education activities
2. Scientific guide for school visiting the Observatory
3. Organize Local and national events for game-based learning activities
4. **NAEC-IAU** Helping the Italian Office of Astronomy Education (OAE) developing specific actions for Astronomy Education - Since 02/23

APR 2021 – CURRENT Bologna

### **ORDINARY MEMBER** GAME SCIENCE RESEARCH CENTER

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Active member of the Game Design commission and the Science, Scientific Citizenship and Game, promoting and design educational practices based on game with the aim to develop scientific citizenship as knowledge and democratic participation in the scientific processes

1 SEP 2019 – 25 JUN 2022 Bologna, Italy

### **POST-DOCTORAL FELLOW** UNIVERSITY OF BOLOGNA

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Member of the MAGCOW research group at the Physics and Astronomy department for studying the origin of astrophysics magnetic fields and acceleration mechanisms. I managed the Outreach activity of the group with the creation of the Science-Art project Into the (un)known

1 SEP 2019 – 25 JUN 2022 Bologna, Italy

### **ASSOCIATE FELLOW** INAF - RADIO ASTRONOMY INSTITUTE

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Collaborating for the design and production of the board game PIXEL for the education of resolution and scientific research in high schools

1 SEP 2017 – 30 JUN 2018 Cambridge (MA), United States

## LONG-TERM VISITING MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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visiting period at the Plasma Science and Fusion Center for my Ph. D. in which I carried out my research in plasma astrophysics and developed a Science Art outreach project for my study named Turbulence | Voice of Space

1 JAN 2015 – 31 AUG 2019 Lisbon, Portugal

## PH. D. CANDIDATE INSITUTO SUPERIOR TÉCNICO

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Part of GoLP - Group of Lasers and Plasmas in which I carried on my research in astrophysics plasma turbulence around supermassive black holes

## EDUCATION AND TRAINING

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1 JAN 2015 – 24 JAN 2020 Lisbon, Portugal

### PH. D. IN PHYSICS Insituto Superior Técnico

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**Address** Lisbon, Portugal | **Final grade** pass with distinction | **Type of credits** ECTS | **Number of credits** 240 |

**Thesis** Kinetic-scale effects in collisionless accretion disks

OCT 2012 – 29 SEP 2014 Pisa, Italy

### M. SC. IN PLASMA PHYSICS University of Pisa

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**Address** Pisa, Italy | **Final grade** 108/110 | **Type of credits** ECTS | **Number of credits** 120 |

**Thesis** Viscosity and nonlocal transport effects in hydrodynamic simulation of inertial confinement fusion experiments

SEP 2009 – OCT 2012 Pisa, Italy

### B. SC. IN PHYSICS Univeristy of Pisa

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**Address** Pisa, Italy | **Final grade** 106/110 | **Type of credits** ECTS | **Number of credits** 180

## DIGITAL SKILLS

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### Hard skills

Adobe Creative Cloud Suite (Photoshop, Indesign, Illustrator, After Effects, Premiere) | Graphic design | Es perienza con Blender, Git, Matlab | Game design | A/V Editing | Linguaggi di programmazione: C++, Fortran, Matlab. | science exhibit design | live broadcast | Game development

### Soft Skills

Project managing | creativity | Problem analysis & Problem Solving | public engagement | Science communication | Science outreach | Public speaking | Lateral thinking | Adaptability and Flexibility | teamwork

## LANGUAGE SKILLS

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Mother tongue(s): **ITALIAN**

Other language(s):

|                | UNDERSTANDING |         | SPEAKING          |                    | WRITING |
|----------------|---------------|---------|-------------------|--------------------|---------|
|                | Listening     | Reading | Spoken production | Spoken interaction |         |
| <b>ENGLISH</b> | C2            | C2      | C1                | C1                 | C2      |

|                   | UNDERSTANDING |         | SPEAKING          |                    | WRITING |
|-------------------|---------------|---------|-------------------|--------------------|---------|
|                   | Listening     | Reading | Spoken production | Spoken interaction |         |
| <b>PORTUGUESE</b> | B1            | B2      | A2                | B1                 | A2      |

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

## ADDITIONAL INFORMATION

### OTHER TRAINING

#### Specialising Workshops

**ENGAGE - Methods and success strategies for science outreach and communication**, 50 hours, INAF, Venezia - 11/21

**Enhancing Generative approaches for gender equality**, 12 hours, MEET Digital Culture Center, Milano - 03-11/21

**Tinkering, coding e gaming per la didattica dell'astrofisica**, 24 hours, INAF, Bologna - 10/19

### PROJECTS

**Science Art projects Into the (un)known - Creator and PI**, design of Science Art immersive visualizations and management a small team of cross-institution experts from digital media art to storytelling between the University of Bologna, CINECA, INAF, and MIT Medialab. I also designed and directed all the Exhibitions generated with this project, in particular, the INAF Exhibit for the 2020 Science Festival in Genoa and an installation at MEET Digital Culture Center for the Venice Biennale 2021. - 02/20-Cur

**Fiber of the Universe - Creator and PI**, a collaboration between the CINECA Visit Lab and the University of Bologna for the creation of a technical pipeline for cinematic scientific data visualization. I co-supervised the work of 3 master's student internships and a Master's thesis project carried out at CINECA. - 02/20-12/21

**Turbulence | Voice of Space - Creator and PI**, design of scientific visualizations and management of a small team of cross-institution experts from digital media to VR artists between IST, MIT Medialab, and ELI-Beamlines. These creations were used in outreach exhibits and projects for the dissemination of my Ph.D. research. - 09/17-01/20

### PUBLICATIONS

#### Selection of Publications

**Inchingolo G.**; Zuzolo P.; De Luca D.; Imboden S.; Paradiso J.; Silvano M.; Guidazzoli A.; Vazza F. Into the (un)known - A Science Art journey of the cosmos data. *Memorie della Società Astronomica Italiana* **2023**, 94, 1. [https://doi.org/10.36116/VIDEOMEM\\_1.2023.11](https://doi.org/10.36116/VIDEOMEM_1.2023.11)

Vazza, F.; Locatelli, N.; Rajpurohit, K.; Banfi, S.; Domínguez-Fernández, P.; Wittor, D.; Angelinelli, M.; **Inchingolo, G.**; Brienza, M.; Hackstein, S.; Dallacasa, D.; Gheller, C.; Brügggen, M.; Brunetti, G.; Bonafede, A.; Etori, S.; Stuardi, C.; Paoletti, D.; Finelli, F. Magnetogenesis and the Cosmic Web: A Joint Challenge for Radio Observations and Numerical Simulations. *Galaxies* **2021**, 9, 109. <https://doi.org/10.3390/galaxies9040109>

**Inchingolo, G.**; Wittor, D.; Rajpurohit, K.; Vazza, F. Radio relics radio emission from multishock scenario, *Monthly Notices of the Royal Astronomical Society*. **2021**, 509, 1, 1160–1174. <https://doi.org/10.1093/mnras/stab3096>

**Inchingolo, G.**; Grismayer T.; Loureiro N.; Fonseca R.; Silva L. Fully Kinetic Large-scale Simulations of the Collisionless Magnetorotational Instability. *The Astrophysical Journal*. **2018**, 859, 2, 149. <https://doi.org/10.3847/1538-4357/aac0f2>

### CONFERENCES AND SEMINARS

#### Outreach Talks

**Invited Talk**, MEET Digital Culture Center, Milan - 02/22

**Invited Talk**, ENGAGE Workshop, Venice - 11/21

**Invited Talk**, Computer Graphic School of Visit Lab CINECA, Bologna - 10/21

**Round Table Speaker**, European researchers night 2021, Bologna - 09/21

**Round Table Speaker**, Weigh Station, Bolzano - 04/21

**Invited Talk**, Science Art correlation, MIT, USA - 03/21

**Keynote Speaker**, Biennale Tecnologia, Turin - 11/20

**Round Table Speaker**, European researchers night 2020, Bologna - 11/20  
**Invited Talk**, Computer Graphic School of Visit Lab CINECA, Bologna - 10/20  
**Round Table Speaker**, Festival della Scienza 2020, Genoa - 10/20  
**Invited Talk**, University of Lancaster, UK - 02/20  
**Keynote Speaker**, Cineteca, Bologna - 10/19

### Invited Talks

PLS - Simulazioni di sistemi complessi, University of Bologna - 02/23  
Various innovative technological experiences, INAF - Palermo - 12/22  
Officina di Narrazione della Scienza, University of Bologna - 09/22  
Gioco, matematica e scienze, GSRC, Firenze - 09/22  
Oxford University, Hosted by A. Schekochihin - 02/20  
EPCC, Edinburgh, UK - 12/19  
ELI-Beamlines, Scientific Visualization Workshop - 11/19  
University of Bologna, Hosted by F. Vazza - 10/19  
University of Pisa, Hosted by A. Macchi - 07/19  
Princeton University, Hosted by M. Kunz - 03/19  
CCA - Flatiron Institute, Hosted by S. Philippov - 03/19  
Columbia University, Hosted by L. Sironi - 03/19  
Massachusetts Institute of Technology, Hosted by N. Loureiro - 03/19  
University of Pisa, Hosted by A. Macchi - 04/17

### Contribute Talks

60th DPP/APS, Portland, USA - 10/18  
45th CPP/EPS, Prague, Czech Republic - 07/18  
OSIRIS workshop, Los Angeles - 09/17  
100th SIF National Congress, Pisa - 09/14

## CREATIVE WORKS

### Exhibitions

**Immersive Exhibition**, "Into the (un)known - Light Generators", MEET the Space, MEET Digital Culture Center, Milan - 09/21  
**Virtual Gallery**, "Into the (un)known", In-Absentia, 2021 Wrong Biennale - 11/20-12/21  
**Multimedia Exhibition**, "Turbulent | Voice of Space", 25th anniversary of the Portuguese Ministry of Science, Lisbon - 12/20  
**Multimedia Exhibition**, "Into the (un)known", Science Festival, Genoa - 10/20-11/20  
**Intermedia Exhibition**, "Turbulent | Voice of Space", European Researchers' Night, Pisa - 09/19  
**Intermedia Exhibition**, "Turbulent | Voice of Space" and the GoLP VR Lab at HFLPI, Milan - 07/19  
**Multimedia Exhibition**, "Turbulent | Voice of Space" and GoLP VR Lab, Encontro com Ciencia e Tecnologia, Lisbon 07/19  
**Intermedia Exhibition**, "Turbulent | Voice of Space" and the GoLP VR Lab at the 46th EPS/CPP, Milan 07/19  
**Intermedia Exhibition**, "Turbulent | Voice of Space" and the GoLP VR Lab for the 108th IST anniversary, Lisbon 05/19  
**Intermedia Exhibition**, "Turbulent | Voice of Space" at the PhD open days of IST, Lisbon 04/19  
**VR Exhibition**, "Turbulence | Voice of Space" US tour at MIT, Columbia University, Flatiron Institute, and Princeton University - 03/19  
**Multimedia Exhibition**, "Turbulent | Voice of Space", Beyond the Cradle, MIT MediaLab, Boston - 03/19  
**VR Exhibition**, "Turbulence | Voice of Space" at the European Researcher's Night in Prague - 09/19  
**Video installation**, "Turbulent | Voice of Space" at the 45th EPS Conference of Plasma Physics, Prague - 06/19  
**Canvas Exhibition**, "Turbulent | Voice of Space" MIT Grad Gala at the Boston Science Museum - 03/18

### Videos

PIXEL - Regolamento e how to play, <https://youtu.be/yYwoGZCmkkU>  
Into the (un)known - Light Generators, <https://youtu.be/QsxPeFnBEwv>  
Into the (un)known - A sacred forest, <https://youtu.be/ByTbZb4m0aU>  
Into the (un)known - The Exhibit, [https://youtu.be/pnf-OKPRE\\_U](https://youtu.be/pnf-OKPRE_U)  
Into the (un)known - Overture, [https://youtu.be/ldK8W7\\_mPwc](https://youtu.be/ldK8W7_mPwc)  
Into the (un)known - Relics of a Cutting out boarding, <https://youtu.be/9R2PZ9gWbNU>, 2020 NRAO Image Contest 1st prize  
Into the (un)known - Light on the Invisible, <https://youtu.be/3hpbEVsAZUg>  
Into the (un)known - An inside journey around a black hole's accretion disk, <https://youtu.be/yCIW7nRt-Sk>  
Turbulence - Goldmine, <https://youtu.be/RtVEPdPYNZs>  
Turbulence - What do you hear?, <https://youtu.be/Ln1HclZucjQ>  
Turbulence - Accretion disks, <https://youtu.be/jyWfTsoa9jA>

Turbulence - the origin, <https://youtu.be/g2lQm2Qlbqw>, 2018 EPS best video in Plasma Physics

## Webpages

Into the (un)known - Personal web page, <https://www.giannandreaingolo.com/into-the-unknown>

Into the (un)known - INAF exhibit web page, <https://into-the-unknown.inaf.it/>

Turbulence | Voice of Space - personal web page, <https://www.giannandreaingolo.com/turbulence>

## Interviews and media coverage

26 interviews and media coverage in local, national and international press. The updated and complete list is available here: <https://www.giannandreaingolo.com/press>

A selection of the 3 more relevant and recent or Science Art production:

Mingone C. (2022, Mar 28) *Arte dai dati scientifici: l'impossibile diventa realtà*. Retrieved from <https://www.media.inaf.it/>

Memeo P. (2022, Jan 19) *Occhi per vedere*. Retrieved from [Coelum Astronomia](#) n. 254

Cozzi E. (2021, Dec 1) *Light generators* shown in the tv show [Space Walks](#) ep.2 on RAI

## HONOURS AND AWARDS

### Science Art Awards

**2020 NRAO Image Contest for 40th anniversary of VLA - First Prize**, NRAO - 10/20

**2019 Wiki Science Competition**, Wikipedia - 06/20

**Cross Fertilisation Lab winner**, MEET - Digital Culture Center - 06/20

**2018 EPP/GoLP "Natas" - Best Image**, GoLP/IST - 01/19

**2018 EPS Best video in Plasma Physics**, European Physics Society - 07/18

**2016 EPP/GoLP "Natas" - Best Image**, GoLP/IST - 02/17

## MANAGEMENT AND LEADERSHIP SKILLS

### Relevant projects

**PCTO - Co-designer** GBL activities for high school students using PIXEL, the INAF/GSRC board game - 09/22-Cur

**Astrophysics ludography - PI** Review of commercial board games on Space and Astrophysics for educational use - 01/22-Cur

**PIXEL - Picture (of) the Universe - Co-designer** board game development for the education of high school students - 09/20-Cur

**GoLP VR Lab - Creator and Co-manager** managing the production of output scientific visualizations for GoLP/IST - 01/19-01/20

### Leading in Outreach and Education Activities

**Teacher training**, weekly course for GBL training at Golem's Lab, Bologna - 03/23-Cur

**Science guide**, Weekly guide for school visiting tours at Arcetri Astrophysics Observatory, Florence - 09/22--Cur

**Lecture**, PLAY Viterbo, Lecture on Game-based learning for STEAM and Astrophysics Education - 03/23

**Scientific Cineforum**, OAS-INAf event for "Women in Science 2023", Cineteca Bologna - 02/23

**Lecture and VR workshop** at the 2023 Piano Lauree Scientifiche, University of Bologna - 02/23

**GBL Activity**, PIXEL at the 2022 Lucca Comics and Games, Lucca - 11/22

**GBL Activity**, PIXEL at the 2022 Rome Science Festival, Rome - 11/22

**Support**, Arcetri events for the 150th anniversary of the observatory, Firenze - 10/22-11/22

**GBL activity**, PIXEL at the 2022 FirenzeGioca fair, Firenze 09/22

**GBL activity**, PIXEL at the 2022 European researchers night, Firenze - 10/22-11/22

**Co-Organizer**, for the Game activities for the INAF stand at 2022 PLAY Game Festival, Modena - 05/22

**GBL Activity**, PIXEL at the 2021 Lucca Comics and Games, Lucca - 10/21

**GBL Activity**, PIXEL at the 2021 PLAY Game Festival, Modena - 09/21

**Scientific Cineforum**, with the movie "First man" for high school, Cineteca Bologna - 11/19

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*Le informazioni contenute nel presente curriculum vitae et studiorum sono rese con la personale responsabilità del sottoscritto, ai sensi degli articoli 46 e 47 del Decreto del Presidente della Repubblica 28 Dicembre 2000, numero 445, e successive modifiche ed integrazioni, consapevole della responsabilità penale prevista dall'articolo 76 del medesimo Decreto per le ipotesi di falsità in atti e dichiarazioni mendaci.*

Bologna , 21 Mar 2023