



WP2: DISCO - Dissemination and Communication (DISCO)

Catalina Curceanu, INFN, Italy

STRONG-2020 ANNUAL MEETING (2022)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093

○ WP2 objectives:

To promote and realize efficient and targeted dissemination, exploitation of results and communication activities resulting from the dedicated research and transnational activities performed within the project, in order to raise the awareness about their importance, to promptly inform the various communities on the obtained results and to enhance the future financing opportunities targeting the self-sustainability of the involved community, with special care on sex and gender dimension. **DISCO is a transversal and integrated activity, which involves all the other WPs of the project.** The objective is to promote and realize dissemination and communication of the results coming from the project, with special focus on the involved research infrastructures, toward:

- The scientific community of specialists in hadron physics
- The wider scientific community
- The general public, industry representatives and policy makers

Reminder: DB structure and meetings

The DISCO Work Package is led by INFN (Catalina Curceanu), with the support of the Dissemination Board (DB)

DB started its activity in October 2020 and up to now had 37 DB meetings – 12 in the last year since October 2020 (all but one online).

All meetings of DB have Minutes

BD Composition and infos

(WPs be careful for your representative!)

Chair: Dr. Catalina Curceanu – LNF-INFN

Experienced researcher and spokesperson for SIDDHARTA-2 and VIP-2 Collaborations (hadron physics).

Experienced in Dissemination activities: lead Dissemination within HadronPhysics-2 and 3 projects: organized tens of Workshops and International Conferences: writes articles for public in 3 countries: organized schools for students and teachers: seminars and conferences in schools, public places: participant in 4 TEDx events and Festivals



WP2: DISCO

BD Composition and infos

(WPs be careful for your representative!)



Prof. Achim Denig, PRISMA+ Cluster of Excellence and JGU Mainz, Germany

representative of TNA–Transnational access, for which we have 7 Work packages

Achim has been working at e^+e^- colliders in Frascati, Stanford, and Beijing, carrying out form factor measurements in hadron physics, which serve as input to precision tests of the Standard Model. These measurements also allow for investigations in the field of hadron spectroscopy, for which he is preparing detectors for PANDA/FAIR. Since 2008 he is professor at JGU Mainz and has served as the director of MAMI. He is one of the founding fathers of the MESA accelerator in Mainz, for which he and his group are currently preparing the experimental programme.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.



BD Composition and infos

(WPs be careful for your representative!)

Dr. Herve' Moutarde, CEA, France,

representative of VA - virtual access, for which we have 2 Work packages

Hervé is an expert of hadron structure studies and responsible of the nucleon structure laboratory in IRFU. He created the PARTONS project and has been leading the international development team. He has a long experience in various aspects of scientific computing, including lattice QCD or radiative hydrodynamics simulations of electromagnetic plasmas. He is also quite involved in teaching and in student supervision.

BD Composition and infos

(WPs be careful for your representative!)

Dr. Raphael Granier de Cassagnac, CNRS France, representative of Quark Gluon Plasma, for which we have 4 Work packages

Raphael is a member of the CMS collaboration at CERN, one of the leaders of its heavy-ion programme, expert in heavy flavor and electroweak boson physics. In addition, he participates to several dissemination projects: participation to outreach conferences (the Utopiales at Nantes for instance), partnership with the Manzalab company to teach in virtual reality, conception of a video game on particle physics for a broad audience. In 2019, he was awarded a research and education chair on the "Science and Video game" theme





BD Composition and infos

(WPs be careful for your representative!)

Dr. Marco Battaglieri, INFN Genova, Italy,

representative of QCD, SM, for which we have 3 WPs

Senior staff scientist at INFN, studied for more than 20 years the internal structure of the nucleon and the hadrons spectra. Member of international collaborations (GRAAL, CLAS, HPS, BDX), used middle energy electromagnetic probes (1-10 GeV electron and gamma beams) to study the hadron properties. He is co-PI of JR7 'Light and heavy quark hadron spectroscopy' working package in STRONG-2020. He is an active collaborator of outreach programs such as EEE - Extreme Energy Events, OCRA - Outreach Cosmic Ray Activity, aiming to spread the scientific culture in the society. He is currently leading one of the experimental Halls at Jefferson Lab (US).

WP2: DISCO

BD Composition and infos

(WPs be careful for your representative!)

Dr. Fulvio Tessarotto, INFN Trieste, Italy,

representative of Detectors, for which we have 3 WP

Senior Researcher of INFN Trieste, is one of the world leading experts in large size single photon detectors.

He is co-spokesperson of the COMPASS Collaboration at CERN and coordinator of the Italian participation in the RD51 Collaboration. He has a long experience in measuring spin effects in hadronic physics, developing gaseous detectors and managing occupational safety and health problems.



WP2: DISCO

BD Composition and infos

(WPs be careful for your representative!)

Dr. Maria Paola Lombardo, Firenze, Italy,

representative of Lattice QCD for which we have 1 WP



I am representing the network NT6 lattice Hadrons.

My previous outreach experiences include the role of Science Communication Officer for the European COST

Action THOR - Theory of ultrarelativistic heavy ion collisions, and the organization of the few events for Eureka! 2018 and 2019, the science festival of the city of Rome.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.



BD Composition and infos

(WPs be careful for your representative!)

Piet Mulders VU University in Amsterdam,

representative of Nucleon Structure and Strangeness, where are 6WPs

Research areas:

(1) Hadron structure in QCD, in particular spin and transverse momentum structure of partons (quarks and gluons).

(2) The symmetry structure and fundamentals of the standard model of particle physics.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.

WP2: DISCO

BD Composition and infos

(WPs be careful for your representative!)

Maurizio Boscardin, FBK – Italy – withdrew Feb. 2021

Representative of SME and industries

We are identifying a new representative – to join DB soon

(Chiara La Tessa)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.



BD Composition and infos

Dr. Andrea Pesce, IKP - Forschungszentrum Jülich, **representative of:**

Development/Optimization of new polarised and unpolarised targets, for which we have 4 WPs

Member of the JEDI and PAX collaboration, he is an accelerator physicist who works in spin Physics and polarised targets experiments. He is one of the responsible of the Target system for the spin filtering tests at the COSY facility.

He was a co-organiser of the exhibition "Physics and Metaphysics" held in Ferrara in 2015-2016, whose principal aim was to bring students (but not only), from primary school to high school, closer to science; responsible for the "Orientation website" of the physics department of Ferrara university.

Since 2014, he's been participating in the orientation days, both in Ferrara university and in Juelich, to present the scientific activities of the university and the lab to undergraduate students.

2014-2018 Co-organiser of "Modern Physics laboratories" at University of Ferrara, a cycle of experiments performed by 5th grade high school students supervised by researchers.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093.

DISCO Contract (post doc since Nov. 2020)

Luca De Paolis (INFN-LNF)

Ph D in Hadron Physics

Experience in nuclear and hadron physics but also in informatics
(such as web page, editing)

Experience in Dissemination

Prepare: Newsletters; STRONG-2020 web-page....



ACTIVITY:
WEB-PAGE UPDATE AND IMPLEMENTATION:



Welcome to the STRONG-2020 website

ACTIVITY:
NEWSLETTERS: UNDER NEWS AND DOCUMENTS

Newsletter n4 November 2021

Newsletter n5 April 2022

Newsletter n6 in preparation – provide please input!

Table of contents

Foreword	3
Statement on the aggression of Russian Federation against Ukraine	4
STRONG-2020 Annual meeting (2021): productive exchange and new perspectives	4
A Tale of Two Values – The Muon Anomalous Magnetic Moment	6
Search for exotic light mesons at COMPASS	15
Toward quarkonium hadroproduction in the Colour Evaporation Model at Next-to-Leading Order in NLOAccess	20
Workshop on space-like and time-like determinations of the hadronic leading order contribution to the muon $g-2$	21
Synergies between the Electron-Ion Collider and the Large Hadron Collider experiments	22
“Resummation, Evolution, Factorization” Workshop	23
First Workshop of STRONG-2020 NA6 - Phase Transitions in Particle Physics	25
PostDoc Interview	27
The STRONG-2020 Public Lecture Series – new lectures!	29
STRONG-2020 supported INSPYRE 2022 International School	31
Commemorations	33

A Tale of Two Values – The Muon Anomalous Magnetic Moment

Andrzej Kupsc (National Centre for Nuclear Research, Warsaw, Poland and Uppsala University, Uppsala, Sweden) and Hartmut Wittig (PRISMA+ Cluster of Excellence and Institute for Nuclear Physics, University of Mainz, Germany), WP21

After years of data taking and painstaking analysis, the Muon $g - 2$ Collaboration presented first results of their new measurement of the muon anomalous magnetic moment, a_μ . The announcement, made during a live presentation on 7 April 2021, was closely watched by thousands of physicists around the globe, all eager to learn whether the new result would confirm the previous measurement performed at BNL almost two decades earlier. As it turned out, it did! What's more, by combining the two results, the tension between direct measurements and the theoretical prediction based on the Standard Model increased to 4.2 standard deviations, tantalisingly close to the 5σ threshold required for claiming that the Standard Model has been proven wrong. The result was clearly one of the physics highlights of 2021 and has generated a flurry of articles and contributions in the press and other media.

But why are physicists looking so fervently for cracks in this magnificent edifice known as the Standard Model of Particle Physics? The answer lies in the increasing body of evidence that the Standard Model (SM) does not provide a complete description of nature, despite the fact that experimental observations at particle colliders agree with SM predictions at an amazing level of accuracy. In particular, it has become abundantly clear from astrophysical

STRONG-2020 PUBLIC LECTURES (SEE ALSO NEWSLETTERS) (>1000 VIEWS/LECTURE)



[HTTPS://WWW.YOUTUBE.COM/PLAYLIST?LIST=PLRUURPCVPIQJT_04A7IPEPJ26N_00A6S](https://www.youtube.com/playlist?list=PLRUURPCVPIQJT_04A7IPEPJ26N_00A6S)

AND ALSO:

[HTTP://WWW.STRONG-2020.EU/EVENTS/LIVE-EVENTS.HTML](http://www.strong-2020.eu/events/live-events.html)



RIPRODUCI TUTTI

STRONG-2020 Public Lecture Series








11 video • 205 visualizzazioni • Ultimo aggiornamento in data 29 set 2022



INFN LNF -
Laboratori
Nazionali di
Frascati

ISCRITTO



-  1:21:40
 - 5  1:15:36
 - 6  1:09:55
 - 7  48:57
 - 8  1:03:17
 - 9  1:11:11
 - 10  1:00:35
- INFN LNF - Laboratori Nazionali di Frascati
- The g-2 of the muon: a probe towards new physics? | G.Venanzoni, M.Passera**
INFN LNF - Laboratori Nazionali di Frascati
- STRONG 2020 - The Beauty and Power of Spin - Prof. Hans Stroehrer**
INFN LNF - Laboratori Nazionali di Frascati
- Strong 2020 - Six quarks for Muster Mark?**
INFN LNF - Laboratori Nazionali di Frascati
- Renaissance of nuclear physics at the LHC - Laura Fabbietti**
INFN LNF - Laboratori Nazionali di Frascati
- How big is the proton? - Prof. Dr. Jan C. Bernauer and Prof. Dr. Randolph Pohl**
INFN LNF - Laboratori Nazionali di Frascati
- Strong 2020**
INFN LNF - Laboratori Nazionali di Frascati

Studying neutron star matter in the laboratory

Paul Souder - Syracuse University (USA)
Chuck Horowitz - Indiana University (USA)

2nd December 2021, 16:00

We describe the PREX laboratory experiment that cleanly measures where neutrons are located in an atomic nucleus. This has implications for neutron stars. Despite being a billion-billion times larger than a nucleus and having half again the mass of the sun, neutron stars are made of the same neutrons with the same strong interactions. We compare PREX results to gravitational wave observations of the merger of two neutron stars with the LIGO and VIRGO detectors

<https://youtu.be/NygnPiogMLc>

Gravitational waves and physics at the extreme

Jo van den Brand,
NIKHEF, Amsterdam
(Netherlands)

13th January 2022, 16:00

The LIGO Virgo Consortium achieved the first detection of gravitational waves. A century after the fundamental predictions of Einstein, we report the first direct observations of binary black hole systems merging to form single black holes. Our observations provide unique access to the properties of space-time at extreme curvatures: the strong-field, and high velocity regime. It allows unprecedented tests of general relativity for the nonlinear dynamics of highly disturbed black holes. In 2017 the gravitational waves from the merger of a binary neutron star was observed. This discovery marks the start of multi-messenger astronomy and the aftermath of this merger was studied by using 70 observatories on seven continents and in space, across the electromagnetic spectrum.

The scientific impact of the recent detections on nuclear and particle physics will be explained. In addition key technological aspects will be addressed, such as the interferometric detection principle, optics, and sensors and actuators. The presentation will close with a discussion of the largest challenges in the field, including plans for a detector in space (LISA), and Einstein Telescope, an underground observatory for gravitational waves science.

<https://youtu.be/fpj-hLxluSE>

HADRONTHERAPY: what it is, how it works?

24th february 2022, 16:00

Wolfgang Enghardt,
Technische Universität Dresden,
German

PARTICLE THERAPY: PHYSICS BASICS

The ballistic and radiobiological advantages of proton and light ion beams for external beam therapy, in particular the finite range and the elevated linear energy transfer, respectively, rest upon the Coulomb interaction between the projectiles and the constituents of the targets. While nuclear interactions deliver only a rather minor, but non-negligible, contribution to the dose deposition, they are of high importance for radiation protection and dedicated range measurement techniques in particle therapy. The lecture will give an overview on electromagnetic and nuclear interactions of proton and ion beams with matter and consequences for particle therapy technology.

Barbara Vischioni,
National Center for Oncological
Hadrontherapy CNAO, Pavia, Italy

HADRONTHERAPY: FROM PARTICLES TO PATIENTS

I will discuss the major indications and advantages of hadrontherapy for patients' treatment compared to conventional photon therapy. Furthermore, I will give an overview of the results of particle therapy treatment at CNAO, the Italian National Center for Oncological Hadrontherapy, focusing especially on toxicity and oncological outcome, in comparison to experience of other particle facilities worldwide. Finally, an overview on the future CNAO clinical and fundamental research projects will be presented.

How progress is made in fundamental
science - cutting-edge instrumentation

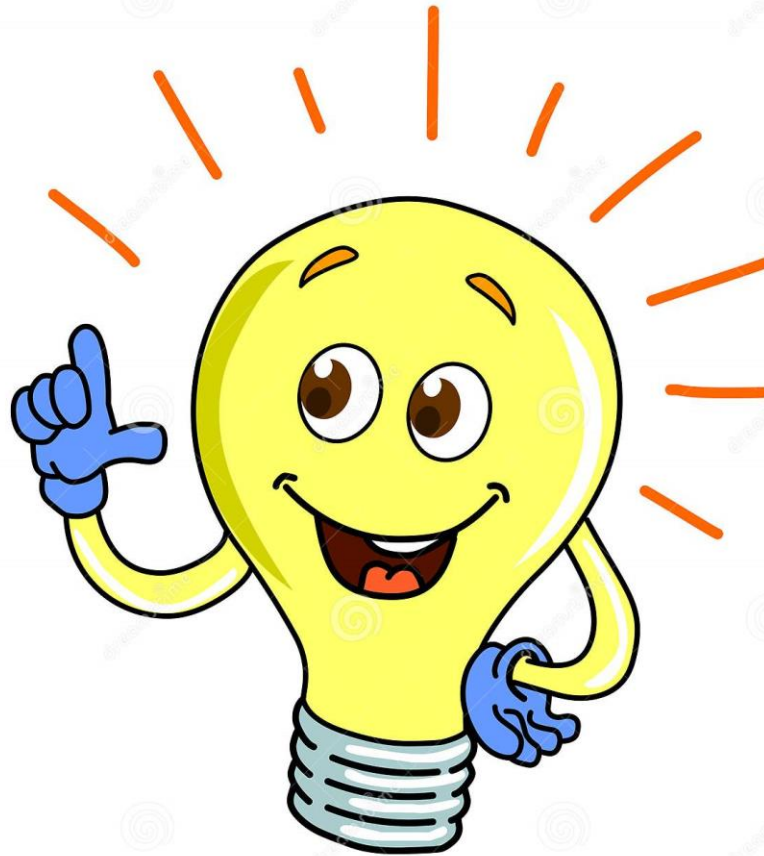
Werner Riegler (CERN)

13th october 2022, 17:00

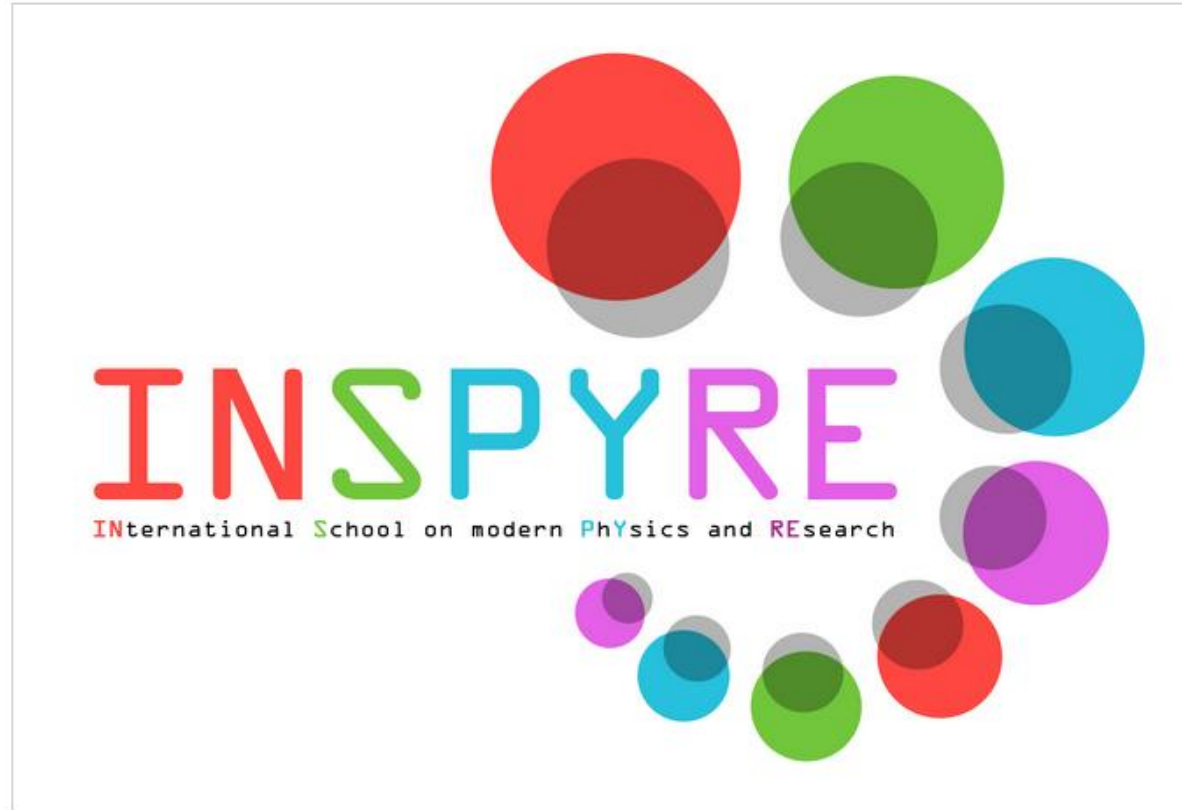


The basis for progress in our understanding of nature is the precise measurement of physics processes. Using examples from particle physics instrumentation, the role of new tools in major discoveries is illustrated. State of the art particle detector principles and technologies are discussed and the challenges for the future are outlined.

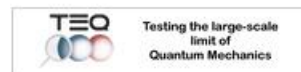
SUGGESTIONS FOR FUTURE STRONG-2020 PUBLIC LECTURES?



Frascati, April 4th – 8th, 2022



From particles to the stars: an INSPYRING adventure



[TeQuantum](#)



[Foundational Questions](#)



[STRONG 2020](#)



[John Templeton Foundation](#)



INSPYRE 2022

9 video • 1.790 visualizzazioni • Ultimo aggiornamento in data 11 apr 2022



INFN LNF -
Laboratori
Nazionali di
Frascati

ISCRITTO



1 INSPYRE 2022 - Welcome LNF - How big is a proton: a modern puzzle

INFN LNF - Laboratori Nazionali di Frascati



2 INSPYRE 2022 - Physics at the femtoscale - Frederik Van Der Veken (CERN)

INFN LNF - Laboratori Nazionali di Frascati



3 INSPYRE 2022 - Illuminating the dark: searches for dark matter deep underground - Laura Baudis

INFN LNF - Laboratori Nazionali di Frascati



4 INSPYRE 2022 - Strangeness in exotic atoms at the DAFNE Collider. All in a timple! - C.Curceanu

INFN LNF - Laboratori Nazionali di Frascati



5 INSPYRE 2022 - Next Generation Accelerators - Lucio Rossi

INFN LNF - Laboratori Nazionali di Frascati



6 SRF Technology: from accelerators, to detectors, to quantum information science - A. Grassellino

INFN LNF - Laboratori Nazionali di Frascati



7 INSPYRE 2022 - Gamma-Ray Bursts: the end is just the beginning - Cristiano Guidorzi

INFN LNF - Laboratori Nazionali di Frascati



8 INSPYRE 2022 - Probing the Universe's history with JWST - Claudia Mignone

INFN LNF - Laboratori Nazionali di Frascati



9 INSPYRE 2022 - Bruno Touschek Visitor Centre - Virtual Tour

INFN LNF - Laboratori Nazionali di Frascati

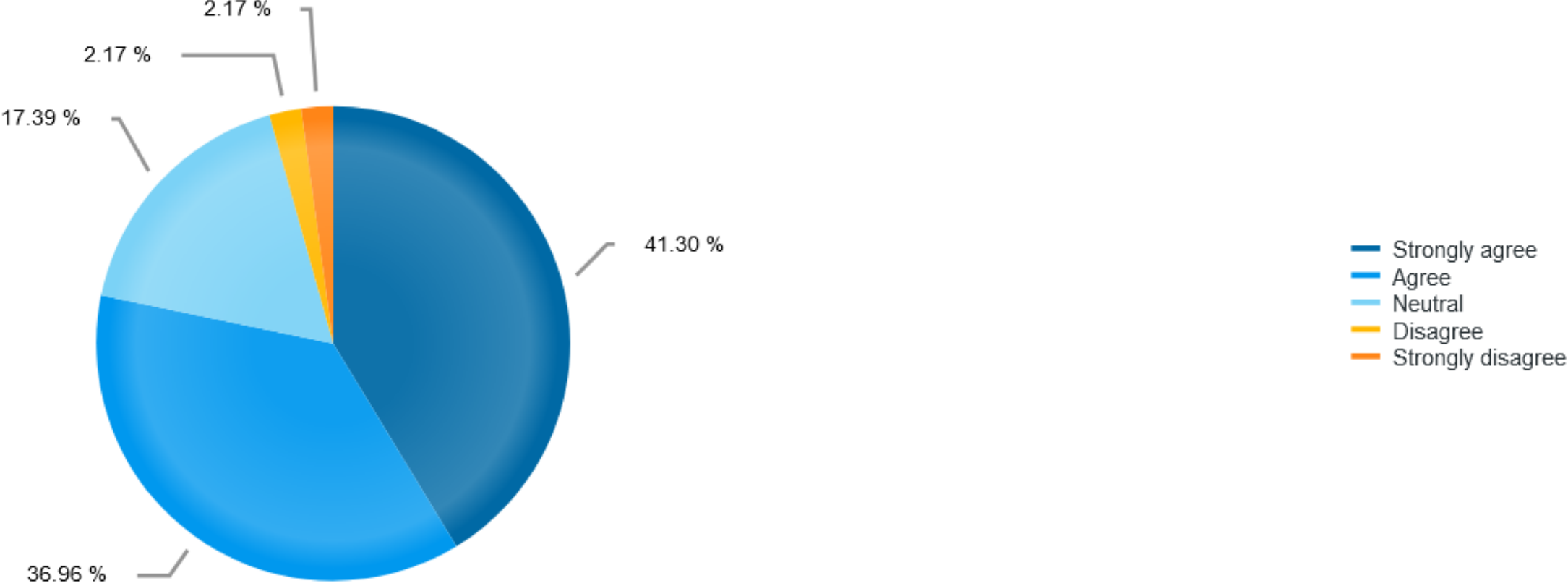
191 registered participants:

Schools: 101

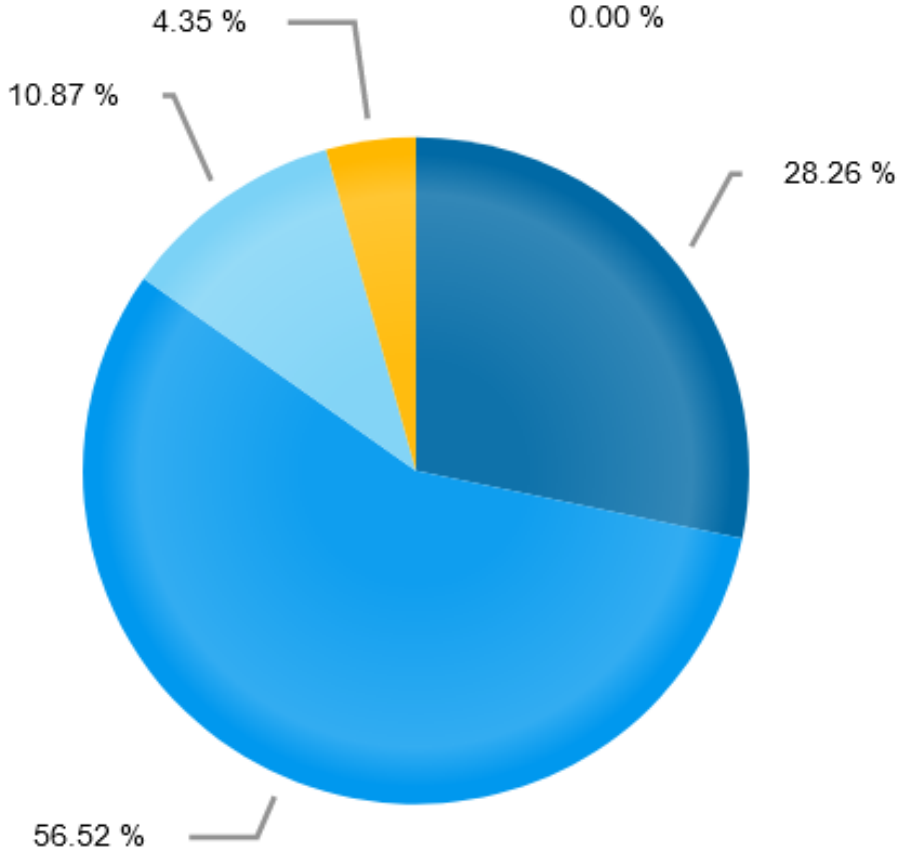
Countries: 13 = Indonesia, Francia, Romania, Germania, Portogallo,
Repubblica Ceca, India, Turchia, Lituania, Irlanda, Svezia, Lussemburgo
Italia

<https://edu.Inf.infn.it/inspyre-2022/>

Attending the INSPYRE School will encourage me to pursue a scientific career.



Attending the INSPYRE School will help me make decisions about my future.



- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Online events specifically targeting the general public organized in the reporting period:

La magia degli acceleratori di particelle, for Frascati Scienza- Scienza Contagiosa:

<https://www.youtube.com/watch?v=krrE3IMC1A4>

L'essenziale è invisibile agli occhi...ma non alle nostre menti: viaggio nel mondo della fisica delle particelle , talk at Researchers Night, 20 sept. 2021

Ce stim si ce nu stim despre Univers – talk (Romanian) online for Octagonal Hub, 10 december 2021

Leadership e ruoli del genere, International Day of Women and Girls in science, 11 feb. 2022

Il talento femminile nella scienza, ruoli e modelli del genere, 8 March 2022 – Pavia University

In-presence events organized in the reporting period :

Catalina Curceanu, Tutti noi in un ditale: stranezza nelle stelle di neutroni, Sabati di Scienza, Carpi, Italy, 8 January 2022, <https://www.modenatoday.it/eventi/incontri-fisica-letteratura-carpi-8-9-gennaio-2022.html> (150 participants).

Catalina Curceanu, Il fascino e la stranezza delle stelle di neutroni, Giornate della scienza, Crema, 18 march 2022, <https://crema-news.it/articoli/catalina-curceanu-ricercatrice-ci-guida-nellaffascinante-mon> (100 participants)

Catalina Curceanu, Pensiero in Evoluzione 2022 - Acceleratori di Particelle con Catalina Curceanu, Borgo Valsugana, 8 April 2022, <https://www.youtube.com/watch?v=VXoJXHQvfgM> (200 participants).

- On 6th May 2022 Catalina Curceanu has given a talk including STRONG-2020 project activities, at the festival Think TO - ThinkTO – Donna Avventura, at Busto Arsizio (Italy); 300 persons were present life to the event.

What do we kindly ask from you

- Contribution from STRONG-2020 Community for videos for youtube channel, Public Lectures and Newsletter, other Dissemination activities
- Strong actions towards realization of our Tasks (next slides)
- D2.4- Proceedings of the Workshop m.42-shift ed
- D2.5-Article in Nuclear Physics News International (NUPECC) and in CERN Courier m.46 - shift
- MS9 - Preparation of the Workshop “Present and future perspectives in Hadron Physics in the 21st Century – m. 29 - shift

Mail: April 2021: Dear STRONG-2020 WP leaders,

I am writing this mail to you in order to propose actions for optimizing our procedure to collect the information regarding the many outputs and activities relevant for Dissemination being done within our STRONG-2020 community. I remind you that the information from all our WPs regarding Dissemination & Communication Activities, to be uploaded also inside the Participant Portal, is MANDATORY, and very important for reporting to EU.

.....For the future I ask your collaboration, in particular I ask you to provide us promptly the information on the various items listed in the Annex to this document (page 2) as soon as they are organized/happening, which will make all the process of gathering info and reporting much easier for all of us.

So, please as soon you have organized/held any article/event/activity... to report it by sending an email with the relevant information (see Annex) ASAP to myself and to Luca De Paolis (in cc); in this way we'll have all information ready anytime we need it. By doing this, we will also be able to optimize our dissemination strategy and activities within the DISCO WP.

thank you very much for your collaboration

Catalina Curceanu

ANNEX – info to be provided

- 1) **Published articles/proceedings which have STRONG-2020 in Acknowledgement**
- 2) **Specify the total funding amount used for Dissemination and Communication activities linked to the project**

Total Funding Amount:

- 3) **Specify the number of Dissemination and Communication activities linked to the project for each of the following categories:**

- Organisation of a Conference
- Organisation of a Workshop
- Press release
- Non-scientific and non-peer-reviewed publication (popularised publication)
- Exhibition
- Flyer
- Training
- Social Media
- Website
- Communication Campaign (e.g. Radio, TV)
- Participation to a Conference
- Participation to a Workshop
- Participation to an Event other than a Conference or a Workshop
- Video/Film
- Brokerage Event
- Pitch Event
- Trade Fair
- Participation in activities organised jointly with other EU project(s)
- Other

- 4) **Specify the estimated number of persons reached, in the context of all dissemination and communication activities, in each of the following categories:**

- Scientific Community (Higher Education, Research)
- Industry
- Civil Society
- General Public
- Policy Makers
- Media
- Investors
- Customers
- Other