G7 SCIENCE & TECHNOLOGY 2024

G7 Conference on Large Research Infrastructures

Synergies and impact on science and society

Location: ***Su Gologone*** ***(Nuoro, Sardegna)***

Date: ***October 28-30, 2024***

ABSTRACT

The Conference, co-organized by the Italian Ministry of Universities and Research with the Italian National Institute for Nuclear Physics (INFN), will investigate the **critical role that large research infrastructures play in advancing scientific knowledge, as well as their economic, social, and geopolitical implications**, with a particular focus on G7 members, but open to other contributions. The report commissioned by the Italian Presidency to The European House – Ambrosetti, launched in April in Turin, will set the scene for the discussion.

Furthermore, the conference aims to explore the opportunities for enhancing collaboration among large research infrastructures hosted by G7 countries by sharing ideas and best practices among policymakers, researchers, and socio-economic stakeholders. The G7 delegations coming to Sardinia will identify, through an open debate, the way forward for better exploiting synergies and complementarities. The conference includes a visit to Sos Enattos, the site Italy is proposing as the potential location for the ESFRI project "Einstein Telescope".

DRAFT AGENDA

OCTOBER 28	
19.00 – 22.00	**Welcome dinner and cultural event**

OCTOBER 29	
9.00 – 9.30	**Registration**
OPENING SESSION	
9.30 – 9.40	**Welcome** **Antonio Zoccoli**, President, Italian National Institute of Nuclear Physics (INFN) **Alessandra Todde**, President, Autonomous Region of Sardinia
9.40 – 09.50	**Research 7+: A Common View** **Maria Chiara Carrozza**, President, National Research Council of Italy (CNR), and Chair, Research 7+
9.50 – 10.00	**OECD Infrastructure Forum 2024: Main Results** **Carthage Smith**, Lead Coordinator, OECD Global Science Forum, OECD
10.00 – 10.25	**Institutional Statements by G7 Members**

	• **Milan Konopek**, A/Director, Research Infrastructure and Outreach, Science Programs and Partnerships Branch, Science and Research Sector, Innovation, Science and Economic Development, Canada • **Susana Gota Goldmann**, Deputy Head of the Research Infrastructures Department, Directorate General for Research and Innovation, Ministry of Higher Education and Research, France • **Ann Schwartz**, White House Office of Science and Technology Policy, United States of America • **Rhianne Tracey**, Senior Policy Advisor – International Research Infrastructures, Department of Science, Innovation and Technology, United Kingdom • **Patrick Hartmann**, Division "Universe and Matter", Federal Ministry of Education and Research, Germany (TBC) • **Michael Arentoft**, Head of Unit for Open Science & Research Infrastructures, Directorate General for Research and Innovation, European Commission
10.25 – 10.30	**Closing Address** **Anna Maria Bernini**, Minister of Universities and Research, Italy

SESSION 1

Report "G7 Large Research Infrastructures: Synergies and Impact on Science and Society"

Presentation of the report "*G7 Large Research Infrastructures: synergies and impact on science and society*" commissioned by the Italian Presidency to a leading Italian think tank, The European House – Ambrosetti. The report provides insights into the scientific, economic, social, and geopolitical impact of large research infrastructures, with a focus on G7 members. Furthermore, it outlines the perspectives of leading scientists, research institutions, and innovative enterprises of G7 members regarding the key priorities for advancing the large research infrastructure sector.

10.30 – 10.40	**Presentation.** Brief overview of the report and the methodology employed in its development by The European House – Ambrosetti. **Corrado Panzeri**, Partner, Head of Innovation & Technology Hub, The European House – Ambrosetti
10.40 – 11.10	**Panel.** Panel composed of leading scientists and representatives of research infrastructures and innovative enterprises who contributed to the working tables convened by The European House – Ambrosetti. • **Jodi Cooley**, Executive Director, SNOLAB • **Barbara Sturm**, Vice President, Leibniz Association and Director, ATB (TBC) • **Alfonso Amendola**, Head of Advanced Modelling and Simulation, ENI (TBC) Moderator: **Corrado Panzeri**, Partner, Head of Innovation & Technology Hub, The European House – Ambrosetti
11.10 – 11.30	**Discussion**
11.30 – 12.00	**Coffee break**

SESSION 2

The Socio-Economic Benefits of Large Research Infrastructures

Large research infrastructures are catalysers of innovative processes, from the production of new knowledge and the generation of high quality FAIR research data to the training of young generations of scientists, from the tech-transfer to industry to the development of the territory.

12.00 – 12.10	**Keynote Speech**: setting the scene for the discussion **Massimo Florio**, Professor of Public Economics, University of Milan
12.10 – 13.00	**Panel.** Panel composed of top-level managers of established large research infrastructures and representatives of major funding agencies that will address the economic, technological, and social roles of large research infrastructures within and across G7 countries. • **José Luis Martínez Peña**, Chair, European Strategy Forum on Research Infrastructures (ESFRI) • **Harriet Kung**, Acting Director, Office of Science, Department of Energy, United States of America • **Phil Diamond**, Director General, Square Kilometre Array Observatory (SKAO) • **Francesco Sette**, former Director General, European Synchrotron Radiation Facility (ESRF) • **Caterina Petrillo**, President, Area Science Park Moderator: **Massimo Florio**, Professor of Public Economics, University of Milan
13.00 – 13.20	**Discussion**
13.20 – 14.30	**Light lunch**

EINSTEIN TELESCOPE AND THE SOS ENATTOS SITE

organized in collaboration with the Autonomous Region of Sardinia

Presentation of the Italian proposal to host the Einstein Telescope and visit to Sos Enattos site, Italy's proposed location for the infrastructure. The visit comprehends both the underground facilities of the former mine and the surface-level SAR-GRAV Laboratory, including the Archimedes experiment.

14.30 – 15.00	**Presentation of the Italian Proposal to Host the Einstein Telescope** • **Marco Pallavicini**, Vice President, Italian National Institute of Nuclear Physics (INFN) • **Ettore Francesco Sequi**, Ambassador and Head of the Italian delegation, Board of Governmental Representatives of Einstein Telescope • **Luigi Guiso**, Axa Professor of Household Finance, Einaudi Institute for Economics and Finance
(30 minutes)	**Transfer** by bus
15.45 – 17.45	**Visit to the Sos Enattos site** *[the participants will be divided in three groups]*
17.45 – 18.15	**Coffee break with local institutional representatives**
(30 minutes)	**Transfer** by bus
20.00 – 22.00	**Traditional Sardinian Dinner**

OCTOBER 30	
SESSION 3 **Large Research Infrastructures, a Portal Towards International Collaboration and Scientific Diplomacy** Large research infrastructures are peculiar and special places for science. They represent a shared heritage without borders, where all participants contribute openly with their resources and skills.	
09.00 – 09.10	**Keynote Speech**: setting the scene for the discussion **Helmut Schober**, Director General, European Spallation Source (ESS)
09.10 – 10.00	**Panel.** Panel composed of representatives from national and international large research infrastructures that will discuss how these infrastructures can build and maintain global connections between countries and people. • **Tetsuya Ishikawa**, Division Director, RIKEN SPring-8 Center • **Gihan Kamel**, Infrared Beamline Principal Scientist, Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) • **Paula Mabee**, Chief Scientist and Observatory Director, National Ecological Observatories Network (NEON) • **Lucia Banci**, Head of the Italian Core Center, Instruct-ERIC • **Mohamad Nasser-Eddine**, Vice President of Programs and Planning, Canada Foundation for Innovation Moderator: **Giuseppe Pastorelli**, Deputy Director General for the Promotion of Italy, Ministry of Foreign Affairs, Italy
10.00 – 10.20	**Discussion**
10.20 – 10.50	**Coffee break**
SESSION 4 **Large Research Infrastructures: Resources and Synergies to Manage Crises and Address New Challenges** Research infrastructures are embedded in the social environment, with which they interact and collaborate. From climate change to pandemics, and from the study and preservation of cultural heritage to environmental protection, large research infrastructures can play a key role in tackling and solving major current and future challenges.	
10.50 – 11.00	**Keynote Speech**: setting the scene for the discussion **Andrew Smith**, Head of External Relations, Elixir
11.00 – 11.50	**Panel.** Panel composed of representatives from research infrastructures operating in frontline sectors, that will discuss how to manage crises and address major current and future challenges, highlighting the importance of synergies. • **Xavier Espinal**, Computing Resources Manager, CERN IT • **Ezio Previtali**, Director, Gran Sasso National Laboratory (LNGS) • **Lilli Freda**, Executive Director, European Plate Observing System (EPOS ERIC)

	• **Nicolas Pade**, Executive Director, European Marine Biological Resource Centre (EMBRC-ERIC) • **Josef Aschbacher**, Director General, European Space Agency (ESA) (TBC) Moderator: **Andrew Smith**, Head of External Relations, Elixir
11.50 – 12.10	**Discussion**
12.10 – 12.20	**A Way Forward: ICRI 2024** **Michael Arentoft**, Head of Unit for Open Science & Research Infrastructures, Directorate General for Research and Innovation, European Commission
12.20 – 12.30	**Doing Research in Sardinia** **Arthur McDonald**, Nobel Prize Laureate, Queen's University
12.30 – 14.00	**Light lunch**
BREAKOUT SESSIONS	
14.00 – 16.00	**Round table A. Large Research Infrastructures Management** Management issues are inherent in all stages of the lifecycle of a large research infrastructure, from project development to implementation, operation, continuous upgrades, and potential reorientation. Financial sustainability and community support present unique challenges at each stage. Both general and specific aspects will be discussed, with a focus on sharing proven best practices, for example concerning user access to instruments and archived data, the remotization of user services, energy management and environmental impact, planning for major upgrades, and internationalization. • **Tetsuya Ishikawa**, Division Director, RIKEN SPring-8 Center • **Jean Daillant**, Director General, European Synchrotron Radiation Facility (ESFR) • **Phil Diamond**, Director General, Square Kilometre Array Observatory (SKAO) • **Jodi Cooley**, Executive Director, SNOLAB • **Helmut Schober**, Director General, European Spallation Source (ESS) • **Paula Mabee**, Chief Scientist and Observatory Director, National Ecological Observatories Network (NEON) • **Lucia Banci**, Head of the Italian Core Center, Instruct-ERIC • **Michael Arentoft**, Head of Unit for Open Science & Research Infrastructures, Directorate General for Research and Innovation, European Commission Moderator: **Giorgio Rossi**, Chair, Group of Senior Officials on Global Research Infrastructures
	In parallel
14.00 – 16.00	**Round table B. Increased Coordination among G7 Members to Facilitate the Development of AI Solutions to the Benefit of All** High Performing Computing (HPC) infrastructures are representing an enabling factor for the production of strategic scientific knowledge and for its transfer into

sustainable innovation capable of improving the quality of life on earth. HPC infrastructures are currently composing an essential factor for addressing, understanding, managing and exploiting the potential of the Artificial Intelligence (AI). However, while in the past HPC development has been almost supported by public investments, the current HPC for AI is mainly implemented with private investments, that are overwhelming public investments, and this is asking for actions addressed to assess the possible socioeconomical implications of this scenario and to develop joint strategies for exploiting safely and wisely AI potentialities for public good and safeguarding the universal values of publicly funded research and FAIR knowledge and innovation. HPC experts and representatives from G7 countries will meet, share their experiences and discuss the points mentioned, designing a possible roadmap for tackling the big questions at the heart of the evolution of HPC and AI in the coming decades.

- **Satoshi Matsuoka**, Director, RIKEN Center for Computational Science (R-CCS)
- **Mark Parsons**, Director, EPCC and Dean of Research Computing, University of Edinburgh
- **Thomas Lippert**, Head, Jülich Supercomputing Centre and Director, Institute for Advanced Simulation
- **Jean-Philippe Verger**, Director, CEA DAM Île-De-France (DIF) (TBC)
- **George Ross**, Chief Executive Officer, Digital Research Alliance of Canada (TBC)
- **Sanzio Bassini**, Director, SuperComputing Applications and Innovation Department, CINECA
- **Grazyna Piesiewicz**, Head of Unit High Performance Computing and Applications, Directorate General for Communications Networks, Content and Technology (DG-CNECT), European Commission
- **Ann Schwartz**, White House Office of Science and Technology Policy, United States of America

Moderator: **Antonio Zoccoli**, President, Italian National Institute of Nuclear Physics (INFN)

In parallel

14.00 – 16.00

Round table C. A Global Network of Research Infrastructures for the Multimessenger Astronomy Paving the New Path in the Universe Exploration

The discovery of gravitational waves, ripples in the “fabric” of spacetime, has opened an exciting new chapter in cosmic exploration: the era of the multimessenger astronomy. This breakthrough was made possible by the collaboration between ground-based and space-based electromagnetic experiments, along with the global network of gravitational wave detectors that played a pivotal role. Today, next-generation gravitational observatories, such as the Cosmic Explorer in the USA and the Einstein Telescope in Europe, are in the design phase, aiming to observe phenomena never seen before, in collaboration with electromagnetic and neutrino observatories. The round table will discuss the scientific prospects, technological challenges and impact of strong cooperation among research infrastructures operating in this field.

	• **Arthur McDonald**, Nobel Prize Laureate, Queen's University • **Marica Branchesi**, Full Professor, Gran Sasso Science Institute (GSSI) and Chair, Einstein Telescope Observation Science Board • **Harald Lück**, Senior Staff Scientist, Leibniz University of Hannover and Deputy spokesperson of the scientific Einstein Telescope Collaboration • **Patrice Verdier**, French National Institute of Nuclear and Particle Physics (IN2P3) • **Roberto Ragazzoni**, President, Italian National Institute for Astrophysics (INAF) • **Hans Plets**, Research Foundation Flanders (FWO) Moderator: **Mario Martinez-Peréz**, ICREA Research Professor, Institut de Física d'Altes Energies (IFAE)
16.00 – 16.10	**Concluding Remarks** **Giorgio Rossi**, Chair, Group of Senior Officials on Global Research Infrastructures **Gelsomina Pappalardo**, Vice Chair, European Strategy Forum on Research Infrastructures (ESFRI) and Director, National Research Council of Italy - Institute of Methodologies for Environmental Analysis (CNR-IMAA)