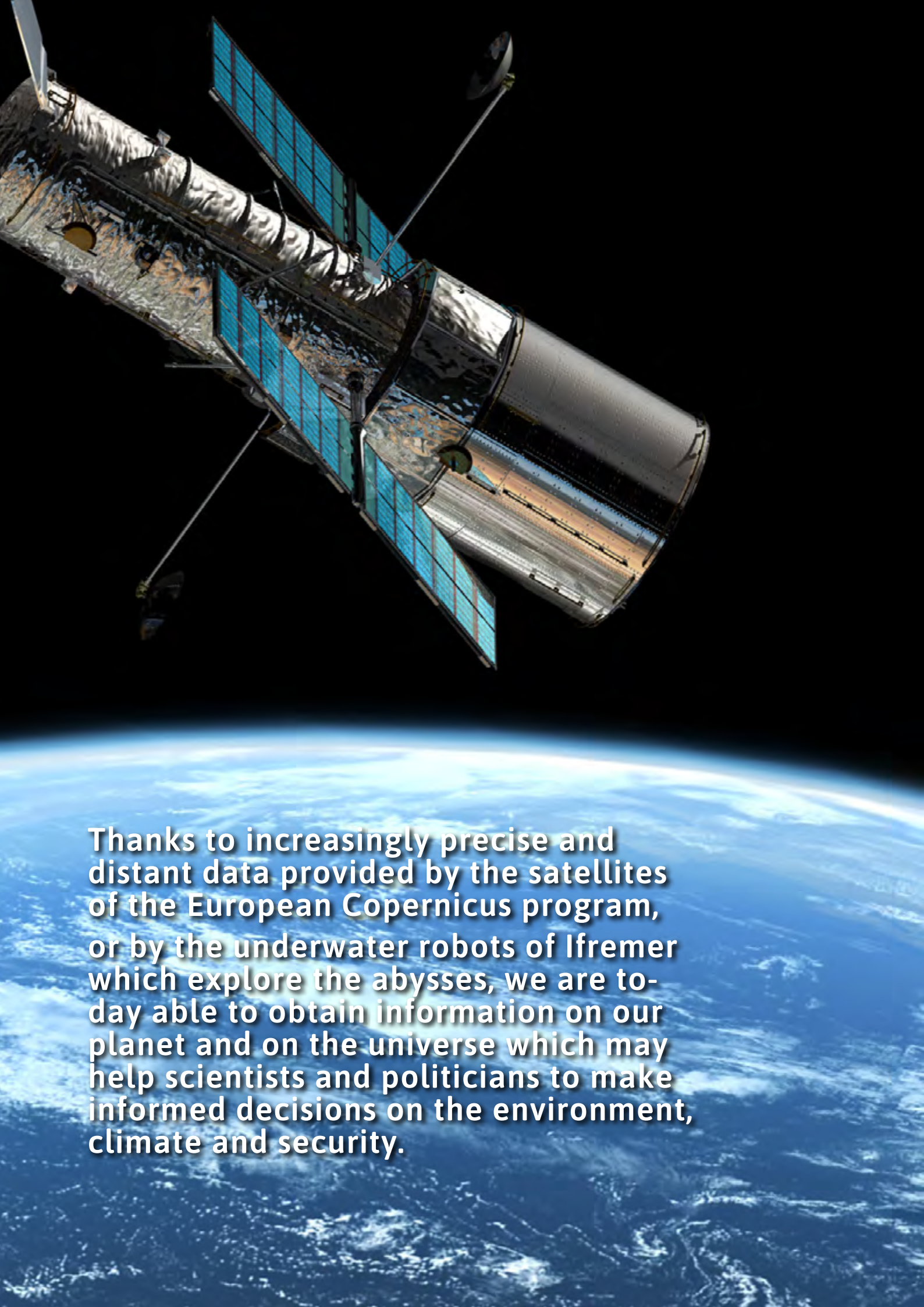


Multimedia show combining arts and sciences

FROM THE ABYSS TO THE STARS

STORIES FROM THE CONFINES

Season 2025 - 2026



Thanks to increasingly precise and distant data provided by the satellites of the European Copernicus program, or by the underwater robots of Ifremer which explore the abysses, we are today able to obtain information on our planet and on the universe which may help scientists and politicians to make informed decisions on the environment, climate and security.

A visual concert that takes us to the confines

On the initiative of the Institute of Digital Transformations at Mines Paris - PSL, as part of the PSL - ATIPICC seed project, a multimedia show structured around two musical electro-acoustic creations, one turned towards the abysses, by composer Kazuko Narita, and the other, towards the stars, by composer Lara Morciano. These pieces will be performed by an instrumental ensemble combining strings percussion and winds. Spatialized mixed works, they will employ the generative electronics technologies of Ircam and the ERC REACH project, led by Gérard Assayag.

This show is made possible by the collaboration of scientific establishments (Mines Paris - PSL, Observatoire de Paris, Université de Toulon, Ifremer), which are making available to the creators observation data recorded by satellites and underwater robots, from the cosmos and the sea, two spaces at the edge of the universe, still bathed in mystery. These data, brought back into the audible and visible spectrums to man, will produce the sound and visual base materials that will feed and inspire multimedia creation.

Director Mark Blezinger, inspired by recent scientific discoveries and advised by a team of multi-disciplinary researchers, builds the show and narrative around the two electro-acoustic compositions. Interludes describing the visual and sonic universes collected by the researchers will punctuate musical progression, like listening keys.

In his staging, the musicians and the video and sound operators form the team of a laboratory exploring the ecological, scientific and philosophical issues facing humanity in the 21st century.

Left page: the Hubble telescope in orbit.



Deep-sea exploration
photo ©Greg Lecoeur





Among the first forms of life in the original sea: jellyfish.

FROM THE ABYSS TO THE STARS

A co-production

ITN (Institute for Digital Transformations) – Mines Paris
- PSL, ATIPICC project
Executive Producer, Crescendo-APJM (Association for the promotion of young musicians).

with the support of

Béla Compagnie, Fondation Mines Paris, Ifremer, Ircam
projet REACH, KM3NeT - CNRS, Observatoire de Paris - PSL, Telomedia, Université de Toulon.

Producer :

- **Brigitte d'Andréa-Novel**, Professor at Mines Paris, Director of the Institute of Digital Transformations (ITN) and President of Crescendo-APJM.

Artistic team :

- **Mark Blezinger**, artistic director, staging multimedia creation.
- **Jacques Keriguy**, literary inspiration.
- **Kazuko Narita**, composer, "Abysses" section.
- **Lara Morciano**, composer, "Comsos" section.
- **Gérard Assayag**, research director at **Ircam**, director of the European Research Council (ERC) Council) "REACH" project (Raising co-creativity in cyber-human Musicianship). Research and AI technologies.
- **José-Miguel Fernandez**, Ircam, Computer Music, electro-acoustic and spatial production.

Musicians :

- **Florent Fabre** : percussions,
- **Jean-Brice Godet** : clarinet,
- **Keika Kawashima** : violon,
- **Marc-Antoine Novel** : cello,
- **Mayu Sato** : flute.

Right page:
"Cosmic reef"
photographed by the
Hubble Telescope, 2020

Self-luminous abyssal fish.



Stories from the confines in 10 chapters

Prologue

Seeds of the ocean

Genesis, introduction

The navigator, the explorer

The discovery of the abysses

Visions of the future

Embracing the Universe

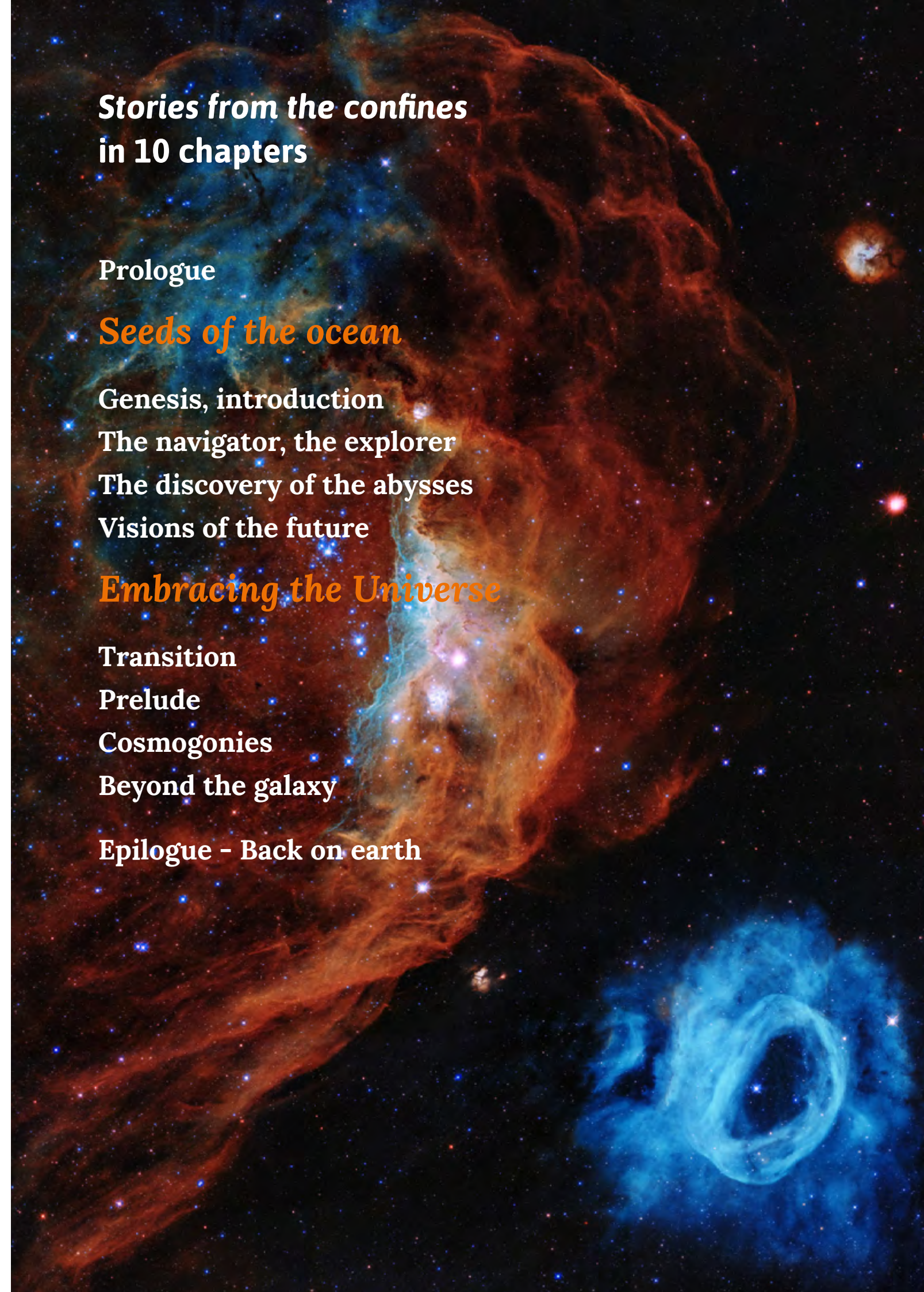
Transition

Prelude

Cosmogonies

Beyond the galaxy

Epilogue - Back on earth



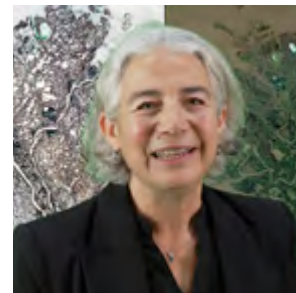
Scientific team



Brigitte d'Andréa-Novel, professor at Mines Paris - PSL, director of Institute of Digital Transformations.



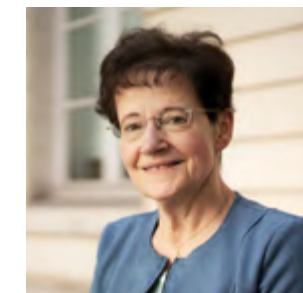
Philippe Blanc, research director at the O.I.E Center (Observations – Impacts – Energy), head of the “Energy and processes” department at Mines Paris.



Sandrine Mathieu-Blanc, directrice adjointe du département Science du spatial et observation de la Terre « ACRI-ST Observation de la Terre et de l'Univers et gestion de la donnée ».



Paschal Coyle, CNRS Research Director, Director of the Laboratoire Sous-Marin Provence Méditerranée LSPM/ CPPM, former spokesman for the ANTARES and KM3NeT collaboration.



Françoise Combes, Astrophysicist, member of the Académie des Sciences, Professor at the Collège de France and President of the Académie des Sciences for 2025-2026.



Christian Sardet, Artist and biologist, Emeritus Research Director (CNRS) at the Oceanological Observatory of Villefranche-sur-Mer.



Valérie Michel-Fauré, PhD – HDR researcher in literature, aesthetics and art history at the Laboratoire Babel, University of Toulon. Professor at Esad TPM (École supérieure d'art et design - Toulon Provence Méditerranée) and at the Camondo school in Toulon.



Karim Adouane, Vice-President, Pedagogical and Digital Innovation. Audio-visual teacher - Studio XR.



Claire Dune, researcher in underwater robotics at the Cosmer laboratory (design of mechanical and robotic systems).



Pierre Rouchon, Professor at Mines Paris – PSL, quantum systems control, member of the Académie des Sciences.



TIME Scientist from Observatory of Paris



Hervé Glotin, scientific manager of bioacoustics, LIS Laboratory (Computer science and systems laboratory) for the acoustic and ecological study of the seabed, professor at the University of Toulon.



Vincent Rigaud, Director of Ifremer Mediterranean Center.

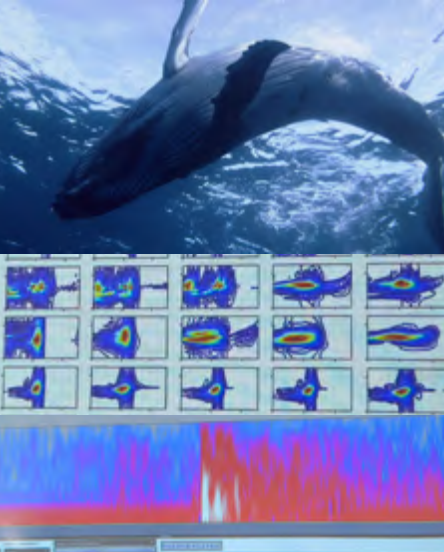


Guy Herrouin, Honorary Director of Ifremer Mediterranean Center.

As an extension of the show : conferences and exhibitions

- **Thematic exhibitions** related to the project, organized under the aegis of **ARC Latitude 43** in Toulon: Interdisciplinary research and creation workshop led by researchers from **EsadTPM**, the **University of Toulon** and the **Camondo School**, and in Paris: **Mineralogy Museum** and **Library of École des Mines de Paris**.
- The show will be accompanied by **two symposia** : the first in Toulon on the abyss, and the second in Paris on the Cosmos (program on next page).





Humpback whale and visualization of sound recordings of cetacean communication using hydrophones by Hervé Glotin's team at LIS.



The "Black Devil", a self-lit abyssal anglerfish

November 6-7, 2025: conference at Toulon University

« The epic of the abyss: arts, sciences and societies »

November 6 :
SHS session organized by Valérie Michel-Fauré

- **Anaïs Escudier**, Attachée territoriale - Cultural and heritage mediation - La Seyne-sur-Mer Town Hall;
 - **Miki Fukumoto**, Japanese artist photographer, presenting her work on the marine world;
 - **Laure Lévêque**, Professor, Director of the Laboratoire Babel and the Pôle ESMED, University of Toulon (Literature, Politics, History);
 - **Valérie Michel-Fauré**, Professor esadtpm, Laboratoire Babel (PhD HDR Literature and Arts);
 - **Cécile Pamart**, Head of mission Culture and Heritage Interpretation, Port-Cros National Park;
 - **Jérémy Migliore**, PhD in population biology and ecology;
- Deputy manager and biodiversity referent at the Muséum départemental du Var (Natural History Museum), Scientific collaborator at the Université Libre de Bruxelles;

- **Alexia Crozet**, future PhD student in creative research, winner of the residency competition at Port-Cros National Park, 2025-2026;
- **Kazuko Narita**, Composer, author of the electro-acoustic piece "Les semences de l'océan" (Seeds of the Ocean) for the DA2E project, Professor of Composition at Doshisha Women's College University in Kyôto.

Novembre 7 afternoon : Scientific session organized by Claire Dune and Brigitte d'Andréa-Novel

- **Vincent Rigaud**, Director of Ifremer Mediterranean Center;
- **Hervé Glotin**, Professor at the University of Toulon, LIS Laboratory (Computer science and systems laboratory), underwater bio-acoustics ;
- **Karim Adouane**, Vice President, Pedagogical and Digital Innovation (audiovisual - Studio XR);
- **Claire Dune**, Assistant professor at the University of Toulon, COSMER Laboratory (underwater robotics);
- **Nicolas Boizot**, Assistant professor at the University of Toulon;
- **Luc Jaulin**, Professor ENSTA Bretagne (mobile robots, underwater robotics, interval analysis);
- **Emmanuel Delaleau**, Professor ENIB Brest (mechatronics, underwater robotics, systems control theory);
- **Alain Oustaloup**, Emeritus Professor, University of Bordeaux, IMS Laboratory (non-integer differentiation, robust non-integer order control);
- **Franca Cebicchini**, Underwater archaeologist at DRASSM.

November 7 evening: multimedia show
"From the Abyss to the Stars", University of Toulon

November 27, 2025: conference at Mines Paris – PSL

« The epic of the Cosmos : humans and machines »

November 27 afternoon :
Scientific Session organized by ITN

- **Godefroy Beauvallet**, General Manager of École des Mines de Paris;
- **Philippe Blanc**, research director at the O.I.E Center (Observations – Impacts – Energy), (solar energy, assessment of renewable energy resources);
- **Sandrine Mathieu-Blanc**, deputy director of the Space Science and Earth Observation department "ACRI-ST Earth and Universe Observation and Data Management";
- **Paschal Coyle**, CNRS Research Director, Director of the Laboratoire Sous-Marin Provence Méditerranée LSPM/CPPM, former spokesman for the ANTARES and KM3NeT collaboration;
- **Pierre Rouchon**, Professor Mines Paris – PSL (quantum systems control), member of the Académie des Science ;
- **Francoise Combes**, Astrophysicist (dark matter specialist) at Paris Observatory – PSL, member of the Académie des Sciences, Professor at the Collège de France and President of the Académie des Sciences for 2025-2026;
- **Christian Sardet**, Artist and biologist, Emeritus Research Director (CNRS) at the Oceanological Observatory of Villefranche-sur-Mer;
- **Brigitte d'Andréa-Novel**, Professor Mines Paris – PSL, director of IT (Control systems theory, generative AI in arts);
- **Gérard Assayag**, Research Director at Ircam, director of the European Research Council (ERC) "REACH" project (Raising co-creativity in cyber-human Musicianship). Research and AI technologies technologies;
- **Lara Morciano**, Composer, author of the electro-acoustic piece "Étreindre l'univers" (Embracing the universe) for the DA2E project, professor at the Luigi Cherubini Conservatory in Florence.

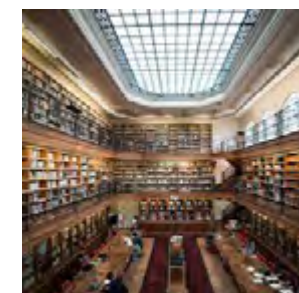
Thematic exhibitions at École des Mines de Paris :

- **Eloise Gaillou**, Director and Curator of the Museum of Mineralogy
- **Romain Bolzoni**, Conservateur adjoint du musée de Minéralogie
- **Sébastien Perrin**, Assistant Curator, Museum of Mineralogy
- **Amélie Dessens**, Curator and Deputy Director of the Library

Novembre 27 evening : multimedia show
« From the Abyss to the Stars », Mines Paris - PSL



Telescope at the Observatoire de Paris



Library and Museum of Mineralogy at École des Mines de Paris



BIOGRAPHIES

Florent Fabre, percussions



Florent Fabre studied with Georges Van Gucht, founding member of the Percussions de Strasbourg with whom he obtained his instrumental and chamber music prizes. Independent percussionist in lyric and symphonic orchestras (mainly Marseille and Toulon) and soloist in chamber ensembles such as Les Percussions de Strasbourg or Musicatreize, he founded the Polychronies ensemble in 1998, of which he is artistic director. He has participated in numerous recordings and played regularly in festivals such as Les Mancas, Les Musiques, the Festival d’Île de France, Présences, Virginia Arts Festival, Ncpa Percussion festival in Beijing, La roque d’Anthéron, Washington DC , Montpellier / Radio-France, creating numerous composers (R. Gagneux, A. Markéas, P. Burgan, P. Zavaro, T.P. Challulau, K. Narita, C. Roque-Alsina, K. Abe, P. Burgan, N. Frize, J.M. Machado ...), often during multi-media shows, in collaboration with choreographers, visual artists and directors (A. Prejlocaj, P. Barrat, K. Ito, E. Ruff, Y. Oïda, P. Christin, E. Billal). Author of several reports on specialized music education, he has led workshops at the University of Aix-Marseille and with Les Percussions de Strasbourg. He is currently a professor in charge of the “multipercussion” module at the CRR of Toulon-Provence-Méditerranée.

Jean-Brice Godet, clarinet



Clarinetist Jean-Brice Godet is an improviser who has played alongside such diverse personalities as Joëlle Léandre, Anthony Braxton, Jean-Luc Guionnet, Mike Ladd, Joce Mienniel, ONCEIM, the COAX, MIRR, 11h11, 2035, Tricollectif, ARBF and Umlaut collectives.

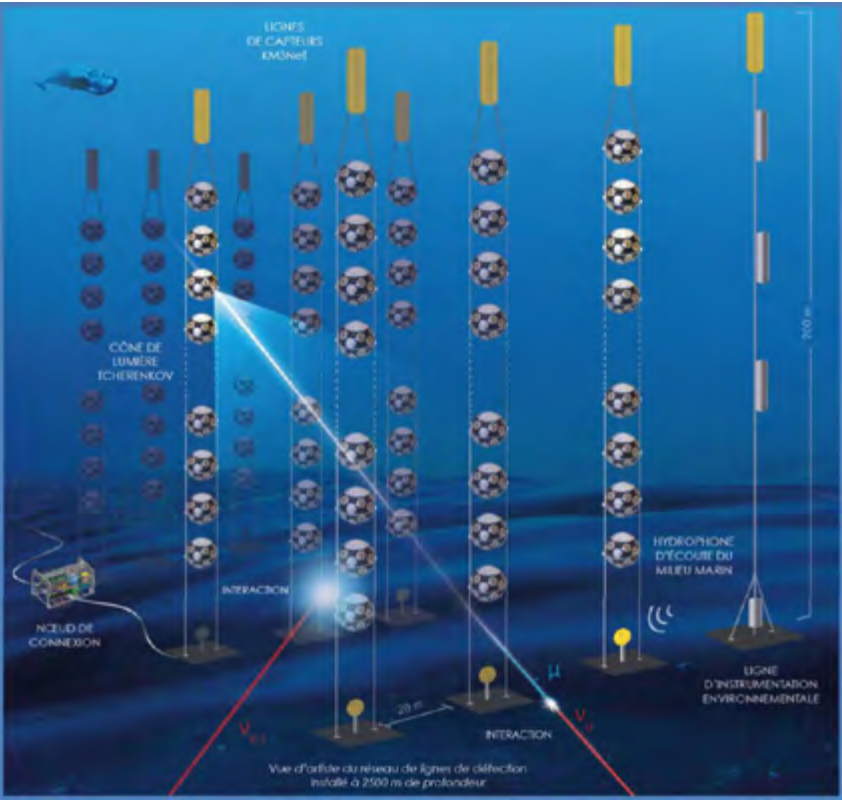
Alongside his sideman activities, he leads several projects, some strictly musical, such as Mujô (a quartet made up of New York and European musicians) and AgOgO (with Sophie Agnel and Toma Gouband), others multidisciplinary, with choreographic or visual artists. Marine Mane, Ema Drouin, Éléanore Bauer, Rozenn Biardeau and Anne Marion-Gallois, among others, regularly call on him to create live shows, street theater and in situ performances.

In addition to his activities as a clarinet performer and improviser, since 2015 he has been developing a singular sound work using dictaphones, K7s and radios. After a dozen concerts with this device, this work takes shape in the form of a solo, “Épiphanies”, for which an album is released on the Gigantonium label in March 2018. He won the JazzMigration#6 prize in 2020/2021 with the repetitive music quartet FANTÔME. His various projects are carried out by the company he founded in 2016, Cie LpLp, and are supported by DRAC Île-de-France, ADAMI, Spedidam and the City of Gennevilliers.

Right:
Artistic illustration of the KM3NeT underwater telescope for neutrino observation 40 km from Toulon at a depth of 2,500 m.

Below:
Artistic illustration of KM3NeT which is also the « Laboratoire sous-marin Provence » installed with Ifremer’s technical assistance to observe the seabed.

© Camille Combes, Agence Ouvreboite



Ammonite fossils



M74 the phantom galaxy, @ JWST, NASA/ESA





Keika Kawashima, violon

Keika Kawashima, born in Tokyo, graduated with honors in 2019 from the École Normale de Musique de Paris, where she studied with Régis Pasquier.

She then obtained a master's degree at the Paris Conservatoire in 2022 under the direction of Stéphanie Marie Degand. First prize winner of the Karlsruhe International Chamber Music Competition in 2017 with Trio Giselle, she has performed at various events, including La Folle Journée in Japan and Salle Cortot in Paris. In 2021, she toured with the ensemble Les Apaches and joined the « Académie de l'Opéra national de Paris » in 2022.



Marc-Antoine Novel, violoncelle

After training with Martine Bailly, Philippe Muller and Xavier Gagnepain, Marc-Antoine Novel studied with Anne Gastinel at the CNSMD de Lyon, where he obtained his Master's degree in cello with honors. He has also studied with other renowned pedagogues (Leonid Gorokhov at the Nice International Summer Academy, Marc Coppey at the Académie Ravel, etc.).

His taste for the orchestra has led him to play with renowned ensembles such as the Orchestre de Paris, with whom he has taken part in several sessions as an academician, and the Orchestre National de Lyon and the Orchestre Colonne, where he is regularly invited as an extra musician. He was also principal cellist of the Orchestre des Lauréats du Conservatoire from 2018 to 2021. He is currently principal cellist of the Orchestre de Chambre d'Ariège, alongside violinist Marie Cantagrill.

He is also interested in chamber music, which he performs as a duo with pianist Philippe Hattat at numerous festivals, and also as a piano-violin-cello trio in a wide variety of settings: the Paris Chamber Music Center, the Klangperipherie concerts in Germany and Austria, the Accademia Chigiana in Siena, etc.

A curious and eclectic musician, Marc-Antoine is equally attracted to the more theoretical aspects of music. This led him to study composition, a discipline for which he holds a Master's degree from the CNSMD in Paris. He also studied conducting and pedagogy. Holder of the "Certificat d'Aptitude" as cello teacher, he has been teaching this discipline at the Conservatoire de Saint-Germain-en-Laye since September 2022.

Mayu Sato, flute

After studying music at the Kunitachi University of Music

(Tokyo), Mayu Sato entered the CNSMD de Paris in 1995, in the class of Alain Marion and Vincent Lucas, where she obtained 1st prizes in flute and chamber music in 1998.

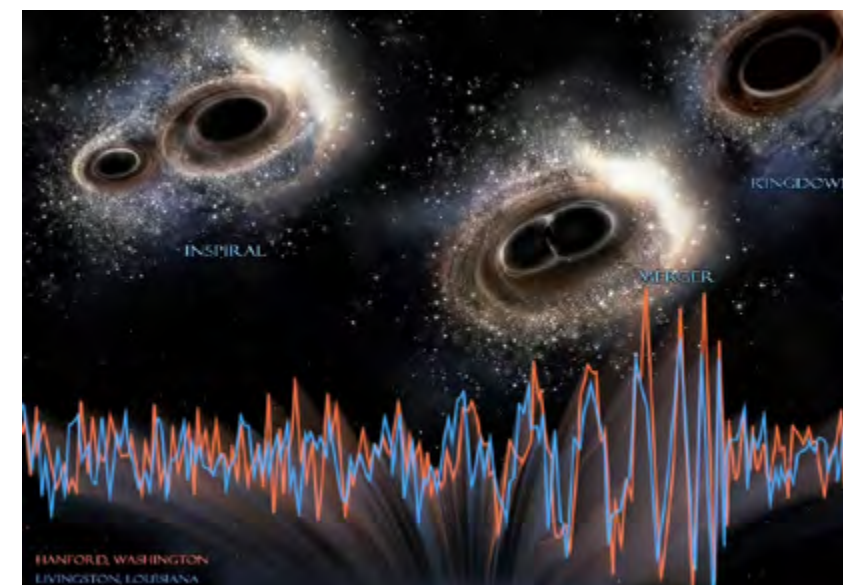
Back in Japan, Mayu won 2nd prize and the Mushanoko-ji-Senke prize at the Biwako National Flute Competition in 2000, teaches flute at the Kunitachi University of Music and plays in various orchestras, including the Tokyo Philharmonic Orchestra. Based in Paris since 2005, she was unanimously awarded 1st prize in Mario Caroli's contemporary music specialization class at the Strasbourg Conservatoire in 2010.

Alongside her activity as a flautist in classical orchestras (Orchestre d'Auvergne, Orchestre de Wallonie, Orchestre Prométhée...), Mayu also explores other ways: Compagnie Nadine Beaulieu (contemporary dance), Anthurus d'Archer (folk inspiration), Ensemble Amalgammes (soundpainting)...

However, chamber music remains his favourite field, and in 2007 Mayu co-founded the Artecombo wind quintet.



Photograph of Sagittarius A, a gigantic black hole discovered in Milky Way galaxy, by the Event Horizon Telescope Telescope (EHT) and published on 10 April 2019. Collaboration, validating Albert Einstein's theory of general relativity.



Left: Illustration of the fusion of two black holes with sonification.



Illustration of a sonification of the Pillars of the Universe photographed by the Hubble telescope



THE UNIVERSE IN A DROP OF WATER

right page:
Plankton mandala (Extract) © Christian Sardet & Les Macronautes / Plankton chronicles
"Plankton – aux origines du vivant" published in 2013 by Ulmer.





Kazuko Narita, composer

studied at CNSMD from Paris from 1976 to 1985 and won first prizes for harmony, fugue, counterpoint, orchestration and instrumentation and musical composition and second prize for electro-acoustic musical composition.

Among the many accolades she has received are prizes won at the Xenakis International Composition Competition, the Max Deutsch International Composition Competition, the Kanagawa Choral Music Composition Competition, and the International Electroacoustic Music and Sound Art Competition. de Bourges, the Takei Prize, and the Japanese Ministry of Culture Prize for scenic creation.

His catalog includes the chamber opera Yume composed for Polychronies, numerous pieces of chamber music, several pieces for orchestra, compositions for choir and instruments as well as several concertos including one for koto Keishô, one for accordion Paysage in B flat created by Pascal Contet, one for alto Song of distant hope op.54 created by Gérard Caussé, one for clarinet Aria created by Michel Lethiec and numerous electroacoustic pieces.

She is a professor of composition at Doshisha Women College in Kyoto.



Gérard Assayag, research director at Ircam

Gérard Assayag founded and directs the Ircam Musical Representations team in the STMS laboratory (Sciences and technologies of music and sound). He directed this laboratory from 2011 to 2017, and in this capacity, was involved in national and international research policies in music and sound sciences. Gérard Assayag has contributed to the creation of several major institutions such as the Collegium Musicae and the Institute of Artificial Intelligence at Sorbonne University or the Society for Mathematics and Computation in Music.

He has defined and popularized, through his numerous publications and software creations (openmusic, max, somax), the concepts of symbolic interaction and co-creativity, in order to account for a rich and versatile human/machine musical dialogue, prefiguring future generations of creative AI. He is the recipient of the prestigious ERC advanced grant from the european research council for his REACH (Raising co-creativity in cyber-human Musicianship) project which supports numerous research and creation activities in 2021-2025.

Lara Morciano, composer

Lara Morciano, a pianist who graduated from the Tito Schipa Conservatory in Lecce at the age of 16, then from the «Academie Pianistique d'Imola» in advanced studies (classes of Rodolfo Caporali, Aldo Ciccolini and Franco Scala), studied composition at the same time at the Conservatoire Sainte Cécile in Rome with Franco Donatoni, where she obtained the advanced diploma in composition in 1995. In 2001, she was selected by the Ensemble intercontemporain (EIC) and Ircam to participate in the composition and computer music course at Ircam. In 2002, she obtained the composition diploma with honors at the Conservatoire National de Région de Strasbourg (class of Ivan Fedele). In 2012, she won the Prix Giga-Hertz international composition competition in Germany for Raggi di stringhe (2011), for violin and electronics, commissioned by Ircam. This was followed by a commission from the Musica Festival in 2013 for Intextus for baroque instrument ensemble and dance, on a choreography by Christine Bayle. The same year, she was selected for the SACRe (Sciences, Arts, Creation and Research) doctoral program at the Université Paris Sciences et Lettres, in partnership with the École Normale Supérieure, the Conservatoire National Supérieur de Musique et Danse de Paris and in collaboration with Ircam, where she defended her PhD in composition in 2018 under the supervision of Gérard Assayag. Estremo d'ombra (2015), commissioned by Ircam and the Venice Biennale, was created in Venice in October 2015 and as part of the Festival Présences de Radio France in 2016. At the International Computer Music Conference in New York, it won the "Icma Audience Award for Best Music Presentation" in 2019.

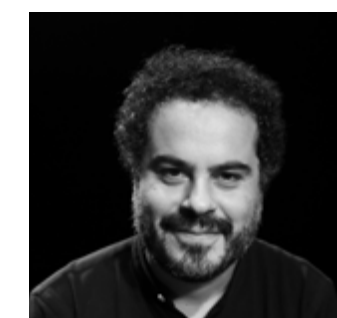


José Miguel Fernandez, computer music producer

José Miguel Fernández studied music and composition at the University of Chile and computer science at the LIPM in Buenos Aires. He then studied composition at the CNSMD in Lyon and followed the Composition Cursus at Ircam.

His works have been premiered at contemporary music festivals in North and South America, Europe, Oceania and Asia by French and foreign soloists and ensembles.

He was selected for the Bourges International Electroacoustic Music Competition and was a laureate of the Grame-Eoc international composition competitions in Lyon and the Giga Hertz Award in Germany. In 2014 he was selected by Ircam to follow the composer-in-residence program on interaction in mixed music and in 2018 for a residency in partnership with the SAT in Montreal. In 2021 he defended his doctoral thesis in music (research in composition) at Sorbonne University/Ircam and he is currently continuing his post-doctoral work within the RepMus team at Ircam as part of the REACH project. His research project focuses on the writing of electronics and the exploration of new tools for the creation of mixed and electroacoustic music.





Mark Blezinger, multimedia director

Born in Baden-Baden and living in Paris, multidisciplinary artist, Mark Blezinger, travels between photography, theater and filmmaking (arte, European television, museums). As a theater man, he collaborated at the Schaubühne in Berlin with directors such as Klaus-Michael Grüber, Peter Stein, Luc Bondy but also with Patrice Chéreau or Bob Wilson in many French and European national stages. Always curious about new technologies, his priority today is the creation of visual and imaginary worlds that bring together Art and Science:

- multimedia scenography for live performance, integrating digital technologies such as interactive projections, generative AI and XR, (augmented concerts of ITN to Salle Cortot, Casino Zug, MC 93, Théâtre Paris-Villette, Théâtre National de Chaillot...);
- (lenticular) photographs taken for the Army Museum, the Mines Foundation or collectors and exhibited at the Rencontres de la Photographie d'Arles or at the ZKM;
- travelling multimedia exhibitions such as *Laterna Magica. The Art of Projection*, created at the Cultural Archives of the Upper Engadine, passing through the Rhaetian Museum in Switzerland and then installed at the Théâtre de la Ville in Paris;
- sound and light shows for the Parc Ela or the "Musée des Merveilles" featuring the work of the painter Giovanni Segantini, the "Belle Époque" or the "Alpine Herbiers".

He is the artistic director of Béla Compagnie, which has been producing his works since 1995. Website: www.blezinger.com

Jacques Keriguy, author



Jacques Keriguy, ancien directeur de l'École nationale des bibliothèques et des sciences de l'information (ENSSIB) est l'auteur de romans et œuvres poétiques, souvent agrégés à des notes de musique, dans lesquels il cherche à faire partager l'irrésistible envoûtement qui émane du Japon. Affecté en 1995 à la Maison franco-japonaise de Tokyo, il s'intéresse, à travers les témoignages qu'ils ont laissés, à l'œuvre des jésuites portugais parvenus au Japon au XVI^e siècle. Il en tire la matière de romans édités aux éditions du Seuil, *La Jonque cathédrale* (2000) et *L'Agonie* (2003). Également passionné par le théâtre classique japonais, il entreprend d'en explorer les représentations spirituelles et religieuses pour en rendre la signification accessible au public occidental. Jacques Keriguy est président honoraire de l'académie du Var et président de Polychronies/2CDM. Aux éditions *Anima Viva multilinguë*, il a dirigé la *Golden Nihon collection*, avec pour objectif de jeter un regard sur l'ancrage spirituel, social, artistique et culturel du Japon.

Site : www.jacqueskeriguy.com

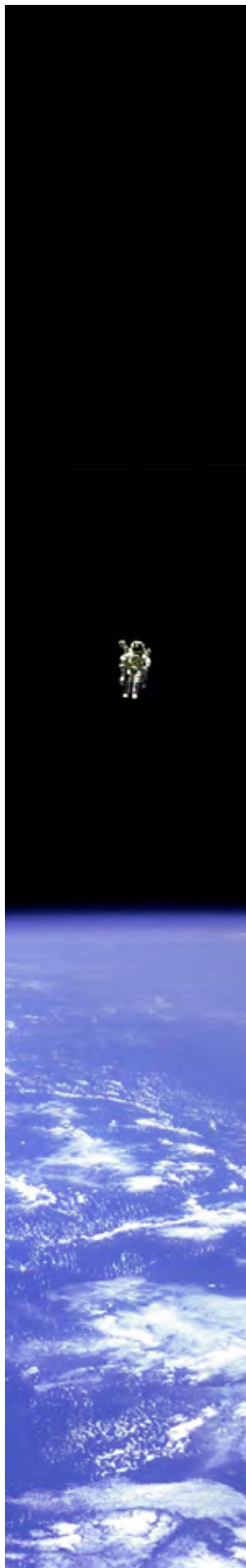
Research laboratory in electro-acoustics, images and sounds



Creating a Chladni figure with a bow.







Broadcast locations

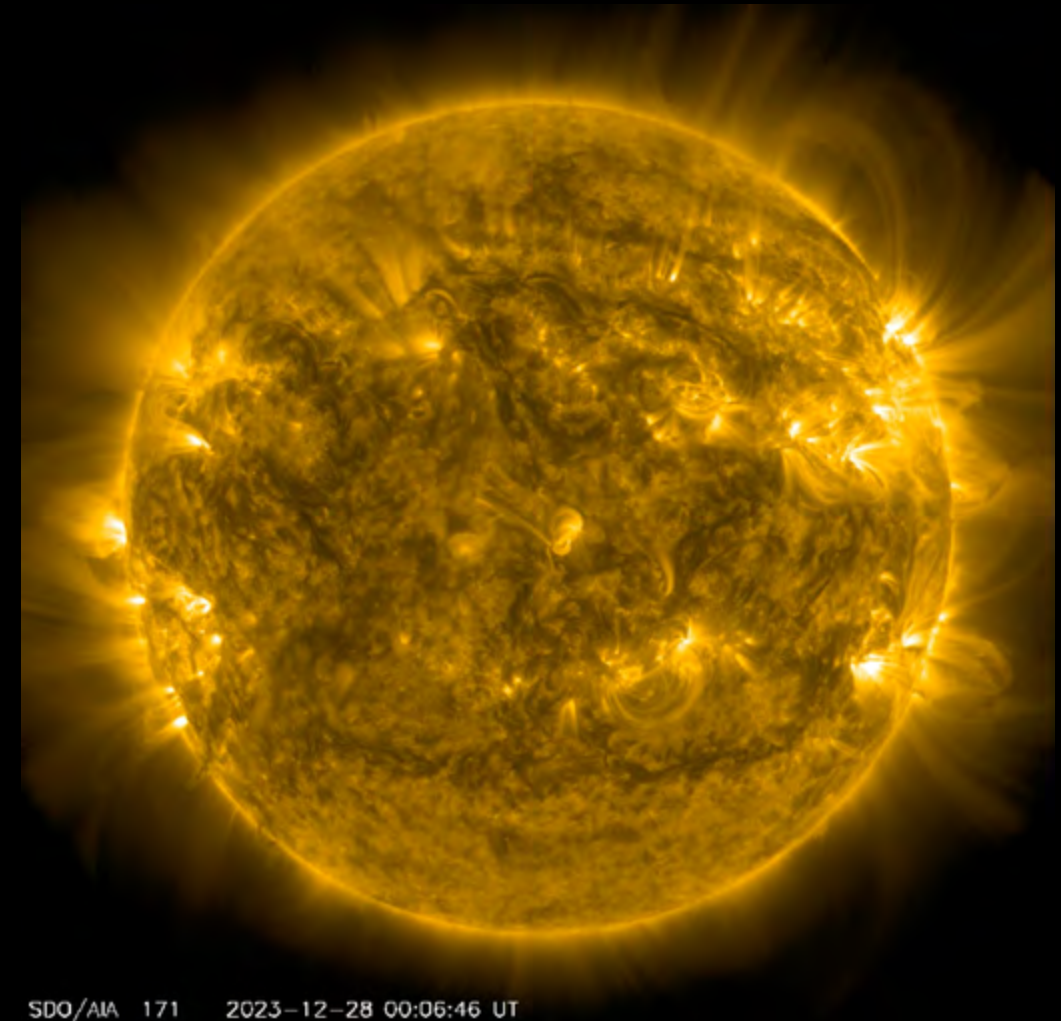
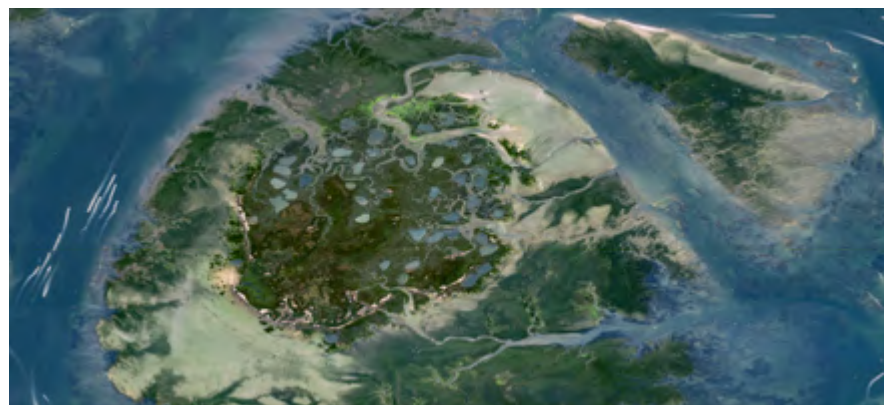
- **Toulon, November 7, 2025**
- **Paris, November 27, 2025**

under discussion

- **Athens**
- **Karlsruhe**
- **Tokyo**

Left: astronaut floating above the earth during a spacewalk from the ISS.

Below and right: Satellite images provided by the team led by Philippe Blanc, Director of Research at the O.I.E. at Mines Paris



SDO/AIA 171 2023-12-28 00:06:46 UT

Design and production ©Mark Blezinger, 2025

Contact

Co-production

ITN Institute for Digital Transformations) –
Mines Paris - PSL, ATIPICC project
Executive Producer, Crescendo-APJM (Association for
the promotion of young musicians)
<https://itn.dev> , www.apjm.fr

avec le soutien de

Béla Compagnie, Fondation Mines Paris, Ifremer,
Ircam projet REACH, KM3NeT - CNRS,
Observatoire de Paris - PSL, Telomedia,
University of Toulon

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Projet PSL
ATIPICC



avec le soutien de :



les — MACRONAUTES

PARAFILMS

