

ISAC 2024

“Eugenio Giordani”

Pesaro UNESCO Creative City of Music – ITALY

IRCAM Centre Pompidou Paris – FRANCE

1. PREMISE

After the success of the first edition of ISAC-2023, which resulted in more than 100 compositions by 77 candidates from 26 countries, IRCAM Centre Pompidou and Pesaro UNESCO Creative City of Music are proud to announce their collaborative effort for this new edition of the ISAC-2024 competition.

The confluence of IRCAM's 30th Forum Anniversary and Pesaro's designation as Italian Capital of Culture 2024, presents a unique opportunity for the competition winners. They will have the privilege to travel from Pesaro to Paris, experiencing the world-renowned public facilities for High-Order Ambisonics (HOA) acousmatic listening: **Sonosfera®** and **Espace de Projection**.

The significant advancement in free Ambisonics technology in recent years has led to the proliferation of artistic creations across diverse realms of music production. Genres such as electronic and mixed music, soundscape art, thematic documentary, audio drama, music recording, etc., are now adopting spatial audio techniques. This allows to shape sound within a spherical domain, transforming space (including the position, dimension and perspective of sound sources) into a tangible compositional tool. Since its establishment in 1971 by Walter Branchi and under the directorship of Eugenio Giordani for over four decades, the LEMS electronic music laboratory has cultivated a tradition in exploring the spatial attributes of sound in Pesaro. While there is now widespread availability of software and hardware for sound synthesis, manipulation, and post-production in these creations, it is evidently much less common to come across theaters and venues equipped for reproducing these works in HOA spherical periphony, particularly for an audience of sufficient size.

Sonosfera® in Pesaro fulfills both needs: a technological standard of 6th order Ambisonics of the highest sound quality level, and a capacity of 60 seats. Sonosfera® is a mobile technological amphitheater for deep listening of ecosystems and music, designed for Pesaro UNESCO Creative City of Music by David Monacchi, opened to the public in Dec 2019. It is equipped with an array of 45 custom-built loudspeakers positioned isotropically (with the only exception of the *nadir* area) in a self-isolating spherical space with perfect internal acoustics. Sound-transparent circular terraces lift the

audience above an acoustically ‘active’ lower hemisphere, while the upper one is also equipped with a 360° projection screen with horizontal resolution of 24k. Sonosfera® puts listeners at the center of the soundscape, in the darkness of a stimulating acousmatic sensorial experience, sometimes “lighted up” by visual analyses of sound. Sonosfera® was in fact originally designed and built for spherical reconstruction and visualization of HOA field recordings carried out in primary tropical rainforest ecosystems, as part of the scope of the long-term project Fragments of Extinction.

The Espace de Projection in Paris, located at IRCAM, is a medium-sized performance hall with adaptable acoustics, accommodating approximately 400 seats. Constructed in the 1970s, its design aimed to offer extensive flexibility in terms of shape, size, and acoustic characteristics. Thanks to this architectural adaptability, different acoustic features can be adjusted separately. For instance, the room's reverberation time can be varied from 0.6 to over 3 seconds. In addition to the hall's remarkable adaptability in terms of its acoustic features, a comprehensive 350-speaker array was installed between 2008 and 2011. This High-Density Loudspeaker Array (HDLA) is composed of four linear horizontal arrays along with a box-shaped array that encompasses the walls and ceiling. The highly dense horizontal arrays are employed for 2.5D Wave Field Synthesis (WFS) and 2D HOA up to order 128. The box-shaped array is specifically designed for 3D HOA with a maximum order of 9. This HDLA creates an unparalleled immersive audio setting for new media and performing arts. It also offers cutting-edge equipment for experimental research in high-definition spatial audio and auditory spatial cognition.

The IRCAM Forum has partnered with ISAC2024 to create a collaborative award, ensuring that winners gain access to these two Ambisonics concert halls. The Ambisonics formalism enables a significant level of independence between the reproduction system (including factors such as the number and spatial distribution of the loudspeakers) and the encoding / decoding format. That is why it is chosen to provide an optimal experience across various venues. The ISAC competition serves as a platform to support creative practices in full-periphonic music and soundscape composition. It contributes to the spread of a culture centered around acousmatic three-dimensional listening - a vision cherished by the pioneers of electronic music, that has not been thoroughly explored until now, given the advantages of modern software and electroacoustic technologies.

2. CALL

The ISAC competition calls for outstanding 3D-audio works created for reproduction in either a half-sphere or full-sphere setup, offering an immersive acousmatic listening experience.

Submissions must be provided in either 6th or 7th order Ambisonics format, with a maximum duration of 10 minutes. (Refer to section 8 for detailed guidelines.)

Candidates are required to submit their works exclusively through the online platform. The procedure starts with sending an email indicating the candidate's name, nationality and age (teams are also accepted) to **isac.pesaro@gmail.com** and in copy to **isac2024-submission@ircam.fr**

Candidates will receive an email containing a link to a private Google Drive folder, where they can upload all their materials. They will have the option to make modifications to their folder until the end of the submission period, which may include a maximum of two different compositions. The Steering Committee will carefully review all submissions to ensure that any references to the candidates' (or team's) names and personal data are removed. Only the compositions, with all identifying information removed, will be forwarded to the International Jury for evaluation.

The requested submission should encompass:

- 1) PDF document 1 — **Program notes** (with no reference to the name of the candidate) including:
 - Title (and potential subtitle)
 - Duration (max 10:00 minutes)
 - Short synopsis detailing poetics and compositional strategies
 - Technical information outlining the original spatialization techniques employed
- 2) PDF document 2 — **Name along with a short bio and a detailed CV**
- 3) WAV file — In 6th or 7th order Ambisonics, ACN-SN3D, 48kHz-24bit (see section 8 for further details).

3. CATEGORIES (ACOUSMATIC – FIXED MEDIA)

The ISAC-2024 edition focuses exclusively on acousmatic fixed media compositions as the primary category. However, due to the exceptional capabilities of the two concert venues (Sonosfera® and Espace de Projection) in accurately reproducing complex acoustic scenes from the real world with unparalleled spatial precision, the creation of 'soundscape compositions' is also strongly encouraged.

4. AWARDS

First Prize	€ 2.500	(+ expenses*)
Second Prize	€ 1.000	(+ expenses*)
Third Prize	€ 500	(+ expenses*)

*Awardees of all 3 prizes will also receive reimbursement for:

- accommodation for 3 days in Pesaro
- travel in Europe to/from Paris
- accommodation for rehearsal and participation in IRCAM concert

The Jury reserves the right to grant up to two special mentions as well.

All winning compositions and special mentions will be presented in the competition at Sonosfera® in Pesaro. Additionally, the three top prize-winning creations will be showcased during the final event of IRCAM's Forum Workshops in the Espace de Projection in Paris. It is imperative for the winners to be physically present in both venues. A further amount for partially sustaining travel expenses dedicated to possible distant or overseas winners is also being considered.

5. JURIES

There will be two different Juries. Initially, a Steering Committee will pre-select compositions based on criteria such as eligibility, technical feasibility, aesthetics and their potential presentation in Sonosfera® and Espace de Projection. Subsequently, an International Jury will evaluate and select the winners from a short list of best suited compositions.

Sonosfera® Curators:

David Monacchi, Daniele Vimini

Espace de Projection, IRCAM Forum Curators:

Greg Beller, Paola Palumbo, Hugues Vinet

Steering Committee:

Nicola Casetta, Carmine Emanuele Cella, Tommaso Giunti, David Monacchi, Alessandro Petrolati.

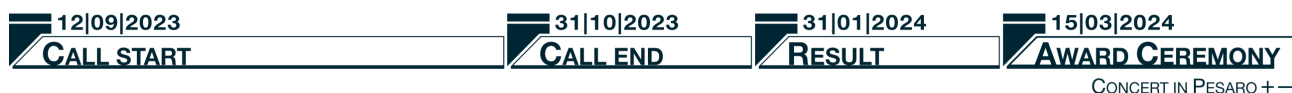
International Jury:

Jury managed by IRCAM Paris

Núria Giménez Comas, Sivan Eldar, Philippe Langlois, Frank Madlener, David Monacchi, Markus Noisternig (Chair).

6. TIMING

- Starting from the date of the call's publication, there will be a period of 49 days for submissions.
- Immediately after the call's deadline, the steering committee will start the evaluation process. Each eligible composition will be assessed in Sonosfera® for selecting (by two different phases) a final short-list.
- Subsequently, the International Jury will thoroughly review and listen to the works on the short-list in Espace de Projection. It will then select the 3 finalists, optionally with 2 honorable mentions. These results will be communicated in January 2024.
- The competition concert, attended by the Chair of the International Jury and the entire steering committee, as well as the awards ceremony for the winners, will be held in Pesaro on March 15th, 2024.
- The final concert will take place in Paris on March 22nd, 2024.



The award ceremony will be held in an official venue of Pesaro UNESCO Creative City of Music. It will be attended by the Mayor of the city, cultural and institutional authorities, members of Juries and general public.

7. CONCERTS

Short-listed compositions, special mentions and winners will have the right to be performed in acousmatic concert events in Sonosfera® scheduled for March 15th -17th, 2024. The 3 winners will be performed also in IRCAM's Espace de Projection on March 22nd.

The three nominees and mentions will have the possibility to work in the Sonosfera® during the 2 days prior to the competition concert, for optimizing and mixing their works for the specifics of full-sphere space.

The three nominees will be invited to IRCAM in Paris for rehearsal (possible period from March 9th to 12th or 16th to 22nd depending on production constraints) then for the concert on 22nd.

Sonosfera® is capable of hosting 60 people per session, thus a number of performances will be scheduled during the day of the awards ceremony and over the week. Espace de Projection will have a broader audience capability but also limited. The final schedule will thus be communicated depending on later organizational considerations and bookings from general public and authorities.

Note: Sonosfera® is equipped with an RGB 60+8+4 spots lighting system. During preparation of the concert authors may suggest a lighting spectrum that goes from total darkness to any desired color/intensity, arranged by local collaborators.

8. SUBMISSION

Technical specifications for AUDIO FILES

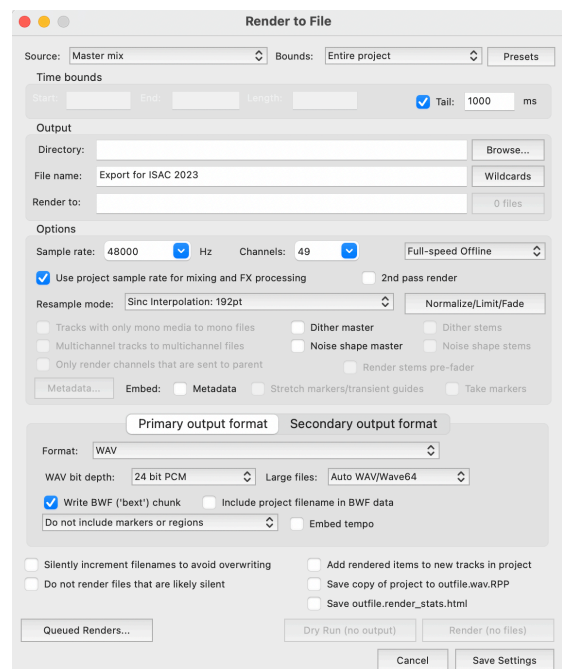
A) For selection phase:

Ambisonics compositions are requested in 6th or 7th order (49 or 64 channels), half-sphere or full-sphere Ambisonics format, with the following specifications:

- Single multichannel WAV file (Wave64, 49-ch. or 64-ch.)
- Sample rate: 48 kHz
- Quantization: 24 bit (16 bit are accepted during selection phase – file size optimization and internet upload ease)
- Channel ordering: ACN (AmbiX)
- Normalization: SN3D (AmbiX)

Note: In the case that a 6th or 7th order Ambisonics file cannot be produced or rendered, 3rd to 5th order Ambisonics format (16-25-36 channels) can also be accepted, but their reproduction will not be optimal in both concert venues.

We highly recommend composing and processing in 6th order Ambisonics, with monitoring of the 3D audio scene through headphones using either freely available or commercially accessible Ambisonics-to-Binaural renderer. Given the current limitations of HOA microphones, soundscape compositions based solely on field recordings will be limited to 4th or 6th order Ambisonics. Compositions that receive awards can be specifically optimized for Sonosfera® or Espace de Projection before the concert. We recommend using dedicated 6th or 7th order Ambisonics tools for the composition, spatial processing, and post-production of audio scenes. Examples include IRCAM's SPAT, IRCAM's Panoramix, IEM tools, and Sparta tools. For composers and sound artists who are less familiar with Ambisonics, they may consider re-encoding their multichannel composition in Ambisonics format (virtual speakers) or, even better, to re-spatializing them in Ambisonics starting from the original N files or synthetic/concrete sound objects (as recommended).



Example of Wave64 export dialog in Reaper

B) For concerts in Sonosfera® and Espace de Projection:

For the competition concert, the 3+2 awarded compositions can be optimized and partially remixed by authors in Sonosfera® starting from full resolution 48kHz-24bit files. The 3 winners will also have this opportunity in IRCAM's Espace de Projection for the final concert.