Toni Mateos - Curriculum Vitae

FURTHER CURRICULAR SOURCES

- LinkedIn profile: https://www.linkedin.com/in/toni-mateos-6855767
- Google Scholar profile: https://scholar.google.es/citations?user=mm-etVoAAAAJ

PROFESSIONAL CAREER

- **Director of Research** and Co-founder at LAOS Network, 2024-now.
- **CTO and Co-founder** at Freeverse.io, 2019-2025.
- **Director of Research**, Advanced Technology Group, at Dolby Laboratories, 2012-2019.
- **Co-founder and Research Director** at Imm Sound, 2009-2012.
- **Scientific Director** of Audio Group at Barcelona Media Innovation Center, 2008-2012.

ACADEMIC CAREER

- **Postgraduate Degree** in Blockchain Technologies, Polytechnical University of Barcelona, 2018.
- **Associate Lecturer** at Dept. Technology, University Pompeu Fabra, 2006-2012.
- **Postdoc** in Acoustic Field Simulation and Audio Spatialization at Barcelona Media, 2006-2007.
- **Postdoc** in String Theory, and Quantum Field Theory / Supergravity duality at Imperial College London, 2004-2006.
- **Doctor in Theoretical Physics**, University of Barcelona, 2004. Ph.D. Thesis on *D-branes, noncommutative theories and gauge/string duality*.
- **CERN** (European Laboratory for Particle Physics), Geneva, Switzerland, Internship, 1999.
- **Degree in Physics** at the University of Barcelona, Spain (first class Honours), 1995-1999.

FELLOWSHIPS AND AWARDS

- **Oscar for Scientific and Technical Achievements** as co-director of the engineering team that created Dolby Atmos, 2024.
- Best peer-reviewed paper at AES 136th convention, 2014.
- Torres y Quevedo Fellowship, Spain, 2006-2008.
- Particle Physics and Astronomy Research Council Fellowship, UK, 2004-2006.
- PhD Fellowship from the *Generalitat de Catalunya*, Spain, 1999-2003.
- Special Mention for undergraduate studies (*Premi extraordinari fi de carrera*) from the U. of Barcelona.
- First of 1999 Physics promotion at the University of Barcelona.

SUPERVISION OF ACADEMIC RESEARCH

PhD Thesis Director:

- *3D audio technologies: applications to sound capture, post-production and listener perception*, Giulio Cengarle, University Pompeu Fabra, 2012.

PhD Thesis Tribunal Member:

- *Wavelet-based spatial audio framework; from Ambisonics to wavelets: a novel approach to spatial audio*, Dept. Information and Communication Technologies, UPF, by Davide Scaini, 2019.
- *Parametric array designs and exploitation methods for directivity control of audible sounds*, Department of Engineering, La Salle Ramon Llull University, by Umut Sayin, 2012.

Master Thesis Supervisor:

- *3D Audio effects for multi-channel reproduction*, Master of Sound and Music Computing, UPF, by Antonio Escamilla, 2009-2010.

Degree Final Projects Supervisor:

- *Musical applications of object-oriented 3D audio*, UPF, by Aleix Fabra Roca, 2008.
- *Tools for 3D audio post-production*, UPF, by Ferran Orriols Lpez, 2008.
- *Livecoreo, a graphical tool for 3D sound post-production*, UPF, by Angelo Scorza, 2011.

LANGUAGES

- Human Languages: **Spanish** and **Catalan** as native languages. Fully proficient in **English**. Fluent in **Modern Greek**. Fair understanding of **Italian** and **French**.
- Machine Languages: Proficient in **Python**, **JavaScript/NodeJS**, **Octave/MATLAB**, **C/C++**, **Solidity**, and **Linux shell** scripting. While I never held a formal developer role, I've been coding for 25+ years and learned hardcore best practices through working with really great developers.

TEACHING EXPERIENCE

- *Acoustics Engineering*, Faculty of Audiovisual Engineering, University Pompeu Fabra, 2010-2012.
- *Foundations of Physics*, Faculty of Computer Science, University Pompeu Fabra, 2006-2011.
- *Experimental Physics*, Faculty of Physics, Imperial College, 2006.
- *Programming in C++*, Faculty of Physics, Imperial College London, 2005-2006.
- *Classical Electrodynamics*, Faculty of Physics, University of Barcelona, 2003-2004.
- *Mechanics Laboratory*, Faculty of Physics, University of Barcelona, 2003-2004.
- *Mathematical Analysis*, Faculty of Physics, University of Barcelona, 2001-2003.

EUROPEAN AND NATIONAL PROJECTS

IP-RACINE (IST-2-511316-IP), Integrated Project Research Area Cinema, 2006-2008. The project was devoted to improving the quality of the European digital cinema industry by creating a complete 'from scene to screen' workflow. Our contribution focused on developing new technologies for high-quality audio postproduction in Digital Cinema; more specifically, we adapted room acoustics algorithms to automate the reverb computation of a scene, given a position of the actors and the camera at every frame. A result of this technology was the new 'pre-listening' capability that allowed the director to hear a real-time 5.1 version of some scenes at the shooting stage.

2020 3D Media (FP7-ICT-2007, 2008-2011) is a large IP European project devoted to improving the European industry related to 3D media, including capture, postproduction, distribution, and exhibition. The BM Audio group participates both in the postproduction and the exhibition work packages. The goal is twofold: to automate and enhance the postproduction of 3D audio content, and to enhance the decoding to arbitrary 3D loudspeaker setups (with loudspeakers at different heights). **Responsible for BM's audio research**.

i3media (CENIT call, 2007-2010) is a large Spanish research project focused on the creation and automation of intelligent audiovisual content. The audio group investigates and develops new technologies for the creation, postproduction, and exhibition of audio content in an automated way. **Responsible for BM's audio research**.

iMP (FP7, 2009-2011) is a STREPs European project aimed at creating architecture, workflow, and applications for intelligent metadata-driven processing and distribution of digital movies and entertainment. The goal is to enable a Virtual Film Factory in which creative professionals can work together to create and customize programs from Petabyte-scale digital repositories, using semantic technologies to organize data and drive its processing. **Responsible for BM's audio research**.

TCEyF (2000-2004, AEN1998-0431 and FPA2001-3598), aimed at the study of fundamental and effective quantum field theories of gravity and unification of all known basic interactions.

PUBLICATIONS

1. J. Herrera-Joancomarti, C. Perez-Sola, T. Mateos, "Scalable Non-Fungible Tokens on Bitcoin", Cryptology ePrint Archive, [cryptology/2025/641]; 2025.
2. Breebaart, Jeroen; Cengarle, Giulio; Lu, Lie; Mateos, Toni; Purnhagen, Heiko; Tsingos, Nicolas, "Spatial Coding of Complex Object-Based Program Material", Journal of Audio Engineering Society, Volume 67 Issue 7/8 pp. 486-497; 2019.
3. G. Cengarle, T. Mateos, "Effect of microphone number and positioning on the average of frequency responses in cinema calibration", Audio Engineering Society Convention 136, 2014. **Awarded best peer-reviewed paper**.
4. D. Arteaga, D. Garca, T. Mateos, J. Usher, "Scene Inference from Audio", Audio Engineering Society Convention 134, 2013.
5. J. Escolano, C. Spa, A. Garriga, T. Mateos, "Removal of afterglow effects in 2-D discrete-time room acoustics simulations", Applied Acoustics, Volume 74, Issue 6, pp. 818-822, June 2013.
6. G. Cengarle, T. Mateos, "A playback-system-independent clipping detector for multichannel audio production", AES 132nd Convention, Hungary, April 2012.
7. G. Cengarle, T. Mateos, D. Bonsi, "A second order Ambisonic device using velocity transducers", JAES Volume 59 Issue 9 pp. 656-668; September 2011.
8. G. Cengarle, T. Mateos, "Comparison of anemometric probe and tetrahedral microphones for sound intensity measurements", Presented at the 130th AES Convention, London, May 2011.
9. T. Mateos, J. Escolano, C. Spa, A. Garriga, "Compensation of the afterglow phenomenon in 2-D discrete-time simulation", IEEE Signal Processing Letters, vol. 17, issue 8, p758-761, June 2010.
10. G. Cengarle, T. Mateos, N. Olaiz, P. Arumi, "A new technology for the assisted mixing of sport events: application to live football broadcasting", Presented at the 128th AES Convention, London, May 2010.
11. D. Garcia, D. Arteaga, J. Usher, T. Mateos, "Determining a room geometry from its impulse response", Presented at Internoise, Lisbon, June 2010.
12. P. Arumi, N. Olaiz, T. Mateos, "Remastering of movie soundtracks into immersive 3D audio", Blender Conference 2009, Amsterdam.
13. Toni Mateos, "The arrival of 3D audio", Keynote in the 6th European Conference on Visual Media Production (CVMP), London, November 2009.
14. G. Cengarle, T. Mateos and D. Bonsi. "Confronto sperimentale tra microfono B-format Soundfield e sonda intensimetrica di pressione e velocit Microflown", 36th national meeting of the Italian Acoustic Association (AIA), Turin, June 2009.
15. C. Spa, T. Mateos, A. Garriga. "Methodology for studying the numerical speed of sound in finite differences schemes", Acta Acustica united with Acustica, Volume 95, Number 4, July/August 2009, pp. 690-695.

16. Olaiz, N. Arumi, P. Mateos, T. Garcia, D. 2009. "3D-Audio with CLAM and Blender's Game Engine" Proceedings of the 7th International Linux Audio Conference (LAC09); April 2009; Parma, Italy.

17. Jaume Durany, Adan Garriga, Pau Arumi, Toni Mateos, "Sound spatialization using ray tracing", Proc. of the EAA Symposium on Auralization, Espoo, Finland, 15-17 June 2009.

18. W. Bailer, P. Arumi, T. Mateos, A. Garriga, J. Durany, and D Garcia, "Estimating 3D Camera Motion for Rendering Audio in Virtual Scenes", 5th European Conference on Visual Media Production, 2008.

19. Presentation and posters at *ASA Acoustics 2008*, Paris:

    - Pau Arumi, David Garcia, Toni Mateos, Adan Garriga, Jaume Durany, "Real-time 3D audio for digital cinema", J Acoust Soc Am. 2008 May ;123 (5):3937 18532723.
    - Jaume Durany, Adan Garriga, Toni Mateos, "Towards a realistic ray tracing for room acoustics", J Acoust Soc Am. 2008 May ;123 (5):3769 18532087.
    - Carlos Spa, Toni Mateos, Adan Garriga, "General impedance boundary conditions in pseudospectral time-domain methods for room acoustics", J Acoust Soc Am. 2008 May ;123 (5):3760 18532057.

20. J. P. Gauntlett, O. Mac Conamhna, T. Mateos and D. Waldram, "AdS spacetimes in M-theory," Fortsch. Phys. **55** (2007) 721.

21. J. P. Gauntlett, O. Mac Conamhna, T. Mateos and D. Waldram, "New supersymmetric AdS(3) solutions," Phys. Rev. D **74**, 106007 (2006) [arXiv:hep-th/0608055].

22. J. P. Gauntlett, O. Mac Conamhna, T. Mateos and D. Waldram, "Supersymmetric AdS(3) solutions of type IIB supergravity," Phys. Rev. Lett. **97**, 171601 (2006) [arXiv:hep-th/0606221].

23. J. P. Gauntlett, T. Mateos, O. Mac Conamhna and D. Waldram, "AdS spacetimes from wrapped M5 branes," JHEP **0611**, 053 (2006) [arXiv:hep-th/0605146].

24. T. Mateos, "Continuous Families of Conformal Field Theories from String Theory," Fortsch. Phys. **54** (2006) DOI 2005 10288.

25. T. Mateos, "Marginal deformation of N = 4 SYM and Penrose limits with continuous spectrum," JHEP **0508** (2005) 026 [arXiv:hep-th/0505243].

26. J. P. Gauntlett, S. Lee, T. Mateos and D. Waldram, "Marginal deformations of field theories with AdS(4) duals," JHEP **0508** (2005) 030 [arXiv:hep-th/0505207].

27. T. Mateos, "D-branes, gauge / string duality and noncommutative theories," arXiv:hep-th/0409259.

28. T. Mateos, "Supersymmetry of tensionless rotating strings in AdS(5) x S**5," Fortsch. Phys. **53** (2005) 943.

29. D. Mateos, T. Mateos and P. K. Townsend, "More on supersymmetric tensionless rotating strings in $AdS_5 \times S^5$," Quantun Theory and Symmetries, Proceedings of the 3rd International Symposium (2003) [arXiv:hep-th/0401058].

30. D. Mateos, T. Mateos and P. K. Townsend, "Supersymmetry of tensionless rotating strings in $AdS_5 \times S^5$, and nearly-BPS operators," JHEP **0312** (2003) 017 [arXiv:hep-th/0309114].

31. J. Gomis, T. Mateos, P. J. Silva and A. Van Proeyen, "Supertubes in reduced holonomy manifolds," Class. Quant. Grav. **20** (2003) 3113 [arXiv:hep-th/0304210].

32. J. Brugues, J. Gomis, T. Mateos and T. Ramirez, "Commutative and noncommutative N = 2 SYM in 2+1 from wrapped D6-branes," Class. Quant. Grav. **20** (2003) S441 [arXiv:hep-th/0212179].

33. T. Mateos, J. M. Pons and P. Talavera, "Supergravity dual of noncommutative N = 1 SYM," Nucl. Phys. B **651** (2003) 291 [arXiv:hep-th/0209150].

34. J. Brugues, J. Gomis, T. Mateos and T. Ramirez, "Supergravity duals of noncommutative wrapped D6 branes and supersymmetry without supersymmetry," JHEP **0210** (2002) 016 [arXiv:hep-th/0207091].

35. J. Gomis and T. Mateos, "D6 branes wrapping Kaehler four-cycles," Phys. Lett. B **524** (2002) 170 [arXiv:hep-th/0108080].

36. T. Mateos and A. Moreno, "A note on unitarity of non-relativistic non-commutative theories," Phys. Rev. D **64** (2001) 047703 [arXiv:hep-th/0104167].

37. J. Gomis, K. Kamimura and T. Mateos, "Gauge and BRST generators for space-time non-commutative U(1) theory," JHEP **0103** (2001) 010 [arXiv:hep-th/0009158].