

# Thomas Chaigne

## Curriculum Vitae

*Institut Fresnel - MOSAIC group*  
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### Work experience

- Since January 2019 **CNRS Research fellow**, *Institut Fresnel, Aix-Marseille Université*, Marseille.  
Research fields: photoacoustic imaging, optical microscopy, neurobiology
- October 2016 – December 2018 **Postdoctoral fellow**, *Bioimaging and Neurophotonics Lab, Charité University Hospital*, Berlin.  
"Biophysics and physiology of directional hearing in fish"  
under the supervision of Benjamin Judkewitz  
Research fields: Non-linear microscopy, Neurosciences, Fish bioacoustics
- January 2012 – September 2016 **PhD in Physics**, *Institut Langevin and Laboratoire Kastler-Brossel*, Paris.  
"Control of scattered coherent light and photoacoustic imaging: toward light focusing in deep tissue and enhanced, sub-acoustic resolution photoacoustic imaging"  
under the supervision of Sylvain Gigan and Emmanuel Bossy  
Research fields: Optics, Wavefront shaping, Light scattering, Photoacoustic imaging

### Education

- 2011–2012 **Research Master degree (2<sup>nd</sup> year) in Quantum Physics**, *Ecole Normale Supérieure*, Paris, (Upper Second Class Honours).
- 2010–2011 **Master (1<sup>st</sup> year) in Physics**, *Ecole Normale Supérieure*, Cachan, (Upper Second Class Honours).
- 2009–2010 **Bachelor in Physics**, *Ecole Normale Supérieure*, Cachan, (Upper Second Class Honours).

### Scientific contributions

#### Publications

- [Real time monitoring of pressure-induced deformation of PDMS to evaluate pressure distribution in microfluidic channels](#), K Acharya, S Monneret, M Brandenbourger, Chaigne, T. **arXiv preprint** arXiv:2605.23729 (2026)
- [A depth-dependent, transverse shift-invariant operator for fast iterative 3D photoacoustic tomography in planar geometry](#), E Küçükömrücü, S Labouesse, M Allain, Chaigne, T. **arXiv preprint** arXiv:2603.28150 (2026)

- [Real-Time Electro-Optic Dual Comb Detection of Ultrasound Waves](#), Chatterjee, D., Etien, L., Boivinet, S., Rigneault, H., Chaigne, T., Mussot, A. **J. Phys. B: At. Mol. Opt. Phys.** 58 153501 (2025)
- [Optical wavefront shaping in deep tissue using photoacoustic feedback](#), Xia, F.\*, Leite, I.\*, Prevedel, R., Chaigne, T. **Journal of Physics: Photonics** 6 (4), 043005 (2024)
- [The mechanism of directional hearing in fish](#), Veith, J.\*, Chaigne, T.\*, Svanidze, A., Dressler, L. E., Hoffmann, M., Gerhardt, B., & Judkewitz, B. **Nature** 1 (7) (2024)
- [Fast interrogation wavelength tuning for all-optical photoacoustic imaging](#), J Saucourt, A Moreau, J Lumeau, H Rigneault, T Chaigne. **Optics Express** 31 (7), 11164-11172 (2023)
- [Roadmap on wavefront shaping and deep imaging in complex media](#), S. Gigan et al. **Journal of Physics: Photonics** 4.4: 042501 (2022)
- [Transparent \*Danio rerio\* as a genetically tractable vertebrate brain model](#), L. Schulze, J. Henninger, A. Faustino, T. Chaigne, M. Kadobianskyi, N. Hakiy, S. Albadri, M. Schuelke, L. Maler, F. Del Bene, B. Judkewitz. **Nature Methods**, 15(11), 977-983 (2018)
- [Scattering correlations of time-gated light](#), M. Kadobianskyi, I. N. Papadopoulos, T. Chaigne, R. Horstmeyer, B. Judkewitz. **Optica**, 5(4), 389-394 (2018)
- [Super-resolution photoacoustic imaging via flow induced absorption fluctuations](#), T. Chaigne\*, B. Arnal\*, S. Vilov, E. Bossy, O. Katz. **Optica**, 4(11), 1397-1404 (2017)
- [Photoacoustic imaging beyond the acoustic diffraction-limit with dynamic speckle illumination and sparse joint support recovery](#), E. Hojman, T. Chaigne, O. Solomon, S. Gigan, E. Bossy, Y. C. Eldar, O. Katz. **Optics Express**, 25(5), 4875-4886 (2017)
- [Super-resolution photoacoustic fluctuation imaging with multiple speckle illumination](#), T. Chaigne, J. Gateau, M. Allain, O. Katz, S. Gigan, A. Sentenac, E. Bossy, **Optica**, 3(1), 54-57 (2016)
- [Improving photoacoustic-guided optical focusing in scattering media by spectrally filtered detection](#), T. Chaigne, J. Gateau, O. Katz, C. Boccara, S. Gigan, E. Bossy, **Optics Letters**, 39(20), 6054-6057 (2014)
- [Light focusing and two-dimensional imaging through scattering media using the photoacoustic transmission matrix with an ultrasound array](#), T. Chaigne, J. Gateau, O. Katz, E. Bossy, S. Gigan, **Optics letters**, 39(9), 2664-2667 (2014)
- [Controlling light in scattering media non-invasively using the photoacoustic transmission matrix](#), T. Chaigne\*, O. Katz\*, A.C. Boccara, M. Fink, E. Bossy, S. Gigan, **Nature Photonics**, 8(1), 58-64 (2014)
- [Improving visibility in photoacoustic imaging using dynamic speckle illumination](#), J. Gateau, T. Chaigne, O. Katz, S. Gigan, E. Bossy, **Optics letters**, 38(23),5188-5191 (2013)

#### Conferences (2022-now)

- 2026 Plenary talk, 26th edition of the European Light Microscopy Initiative – ELM2026 meeting, Coimbra, Portugal (invited)
- 2025 Seminar, Leibniz Institute of photonic technology, Jena, Germany (invited)
- 2025 Seminar, Martin-Luther University, Halle, Germany (invited)
- 2024 GDR Imabio meeting, Grenoble, France (invited)
- 2023 Colloquium 20 years of GDR Imabio, Paris, France (invited)

- 2023 European Conference on Biomedical Optics, Munich, Allemagne
- 2023 Unconventional imaging days, Paris, France
- 2023 GPR Light thrust workshop, Bordeaux, France (invited)
- 2022 Imabio Young Scientist Network conference, Lyon, France (invited)
- 2022 Seminar Neurotech, Marseille, France (invited)
- 2022 Keynote talk Memo chapter, Marseille, France (invited)
- 2022 Talk Consortium EIC M-One, Marseille, France (invited)

## Grants and awards

- 2025-2029 ANR PRCI Metasensor (300k€)
- 2024-2029 [ERC Starting grant \(1.5M€\)](#)
  - 2023 Grant from Institut Marseille Imaging (25k€)
  - 2023 ANR JCJC (260k€)
  - 2023 Grant from Institut AMUtech (25k€)
- 2022-2028 [Equipex+ Circuitphotonics \(photoacoustic imaging project\) \(370k€\)](#)
  - 2020 Grant Institut Marseille Imaging (25k€)
- 2019-2021 [Grant from Bouches-du-Rhône department \(120k€\)](#)
- 2019-2021 [Grant Région Sud \(80k€\)](#)
- 2019-2021 [Momentum grant, MITI, CNRS \(300k€\)](#)
- 2019-2020 ['Pépinière d'excellence' grant, A\\*Midex university Foundation \(20k€\)](#)
- 2017-2018 [Post-doctoral fellowship, Humboldt Foundation](#)
  - 2017 [Young researcher award, Bettencourt-Schueller Foundation, 25k€](#)
- 2013-2016 Three years doctoral fellowship, allowed by the French government
- 2009-2013 Four years undergraduate fellowship (Ecole Normale Supérieure de Cachan)