Nicolas Meirhaeghe, PhD

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EDUCATION

2016–2021	Ph.D. in Neurosciences, *Massachusetts Institute of Technology*, Cambridge, MA, USA
2014–2015	M.Sc. in Space Engineering, *California Institute of Technology*, Pasadena, CA, USA
2012–2016	Ingénieur, *ISAE-SUPAERO*, Toulouse, FR
2009–2012	Classes préparatoires (MPSI/MP*), *Lycée Faidherbe*, Lille, FR

RESEARCH POSITIONS

Nov 2021 – Present	Postdoctoral fellow, *Institut de Neurosciences de la Timone*, Marseille, FR Team head: Thomas Brochier, CNRS Researcher (DR) in Neurosciences
Sep 2016 – Jun 2021	Doctoral student, *Massachusetts Institute of Technology*, Cambridge, USA Advisor: Mehrdad Jazayeri, Professor of Neurosciences PhD Thesis: "Neural encoding of prior experience in sensorimotor behavior"
Oct 2015 – Mar 2016	Research intern, *Centre National d'Etudes Spatiales (CNES)*, Toulouse, FR Advisor: Claudine Mélan, Professor of Neurosciences Master Thesis: "Role of gravity in mental cognitive abilities"
Jul 2015 – Aug 2015	Research assistant, *California Institute of Technology*, Pasadena, USA Advisor: Shin Shimojo, Professor of Psychology
Jul 2014 – Aug 2014	Research assistant, *MIT Kavli Institute for Astrophysics*, Cambridge, USA Advisor: Roland K. Vanderspek, Research Scientist
Apr 2014 – Jun 2014	Research intern, *ISAE-SUPAERO*, Toulouse, FR Advisor: Frédéric Dehais, Professor of Neuroergonomics

TEACHING AND SUPERVISION

2023	Undergraduate student supervision: Camille Uldry Lavergne, *MIT-France Program*
Since 2022	Co-organizer, computational neurosci. project, *CENTURI summer school*, Marseille, FR
2019	Master's student supervision: Shadi T. Kalat,, *Worcester Polytechnic Institute*, USA
2015	Teaching assistant ("colleur") in mathematics (MPSI), *Lycée Bellevue*, Toulouse, FR
2013	Volunteer summer school teacher, *Trinity International School*, Tirunelveli, India

COMMUNITY INVOLVEMENT

Since 2023	Editorial Fellow, *Current Research in Neurobiology*
Since 2021	Board of Directors, *Friends of ISAE* (alumni association of ISAE-SUPAERO)
Since 2021	Examiner, *Simon's Foundation Undergraduate Research Fellowship* (SURF) Program
2021	Examiner, PhD selection committee, Harvard-MIT Dept. *Health Science & Technology*
Since 2020	Ad Hoc Reviewer: *Science Advances*, *PLOS Computational Biology*

SCIENTIFIC OUTREACH

2023	"DECLIC" outreach program for high schoolers (Lycée ND de France, Marseille, FR)
2021	Interviewed for science outreach, YouTube channel Space Y Chile
2019–2021	Editor, writer, workshop organizer, MIT Graduate Blog
2019	Co-instructor, MIT Splash Course (pK-12 High-school Action Group)
2016	Interviewed by the Consulate of France as "Boston's French student of the Month"

CLINICAL EXPERIENCE

2019	Subintern (cardiology and neurology, 3 months), *Mt. Auburn Hospital*, Boston, USA

HONORS & AWARDS

2023–2025	Marie Skłodowska-Curie Postdoctoral Fellowship (211k€)
2023	CIVIS3i MSCA-H2020-COFUND Postdoctoral Fellowship (invited but *declined*)
2022	Fondation pour la Recherche Médicale Postdoctoral Fellowship (107k€ – *declined*)
2022	New Researcher Welcome Award ("allocation d'accueil" de la ville de Marseille)
2021	Brain Sciences Best PhD Thesis Award
2021–2023	European Molecular Biology Organization Postdoctoral Fellowship (140k€)
Jun 2021	Fondation Fyssen Postdoctoral Fellowship (80k€ – *declined*)
Jul 2020	MIT McGovern Institute for Brain Research "20 Rising Stars" Award
2020–2021	Whitaker Health Sciences Fund Doctoral Fellowship (90k$)
2019–2020	MathWorks Engineering Doctoral Fellowship (70k$)
Jan 2018	New Attendee Award, COSYNE conference
Nov 2016	Selected for parabolic flight experimentation, Centre National d'Etudes Spatiales
2016–2017	NASA National Space Biomedical Research Institute Doctoral Fellowship (70k$)
Aug 2016	European Space Agency Scholarship, International Space University (14k€)
2014–2015	Fondation ISAE-Supaéro Scholarship (12k€)
2014–2015	Friends of ISAE-Supaéro Scholarship (10k€)

PUBLICATIONS (*denotes equal contribution)

PEER-REVIEWED ARTICLES

[7] Meirhaeghe N, Riehle A, Brochier T (2023) Parallel movement planning is achieved via an optimal preparatory state in motor cortex. ***Cell Reports*** 42(2), 112136; https://doi.org/10.1016/j.celrep.2023.112136

[6] Beiran M*, Meirhaeghe N*, Sohn H, Jazayeri M, Ostojic S (2023) Parametric control of flexible timing through low-dimensional neural manifolds. ***Neuron*** 111(5):739-753.e8; https://doi.org/10.1016/j.neuron.2022.12.016

[5] Meirhaeghe N, Sohn H, Jazayeri M (2021) A precise and adaptive neural mechanism for predictive temporal processing in the frontal cortex. ***Neuron*** 109(18):2995-3011.e5; https://doi.org/10.1016/j.neuron.2021.08.025

[4] Sohn H*, <u>Meirhaeghe N</u>*, Rajalingham R, Jazayeri M (2020) A network perspective on sensorimotor learning. ***Trends in Neurosciences*** 44(3):170-181; https://doi.org/10.1016/j.tins.2020.11.007

[3] Wang J, Hosseini E, <u>Meirhaeghe N</u>**,** Akkad A, Jazayeri M (2020) Reinforcement regulates timing variability in thalamus. ***Elife*** 9:e55872; https://doi.org/10.7554/eLife.55872

[2] <u>Meirhaeghe N</u>, Bayet V, Paubel P-V, Mélan C (2020) Selective facilitation of egocentric mental transformations under short-term microgravity. ***Acta Astronautica*** 170, 375–385; https://doi.org/10.1016/j.actaastro.2020.01.039

[1] Sohn H*, Narain D*, <u>Meirhaeghe N</u>*, Jazayeri M (2019) Bayesian computation through cortical latent dynamics. ***Neuron*** 103(5), 934–947.e5; https://doi.org/10.1016/j.neuron.2019.06.012

BOOK CHAPTERS
Duda, K R, Newman D J, <u>Meirhaeghe N</u>, Zhang J, Zhou H L (2021) The human side of space exploration and habitation. In *Handbook of Human Factors and Ergonomics, 5th Edition*; https://doi.org/10.1002/9781119636113.ch56

INVITED TALKS
Jun 2023	Computation through Dynamics group meeting (MIT/Stanford/UCL/ETH consortium)
Mar 2023	Action, Timing, and Language Workshop, Marseille, FR
May 2022	Centre de Recherche Cerveau et Cognition (CERCO), Toulouse, FR
Feb 2022	Neuro Meetups Bern, Switzerland (online)
Dec 2021	Timing Research Forum Journal Club (online)
Mar 2021	Institut de Neurosciences des Systèmes, Theoretical neuroscience group, Marseille, FR
Mar 2021	Harvard Medical School, Jenks Vestibular Physiology Laboratory, Boston, USA
Jan 2021	Institut de Neurosciences de la Timone (INT), Marseille, FR
Jan 2021	World Wide NeuRise Seminar Series (online)

CONFERENCE ABSTRACTS (selected)
[14] <u>Meirhaeghe N</u>, Riehle A, Brochier T (2023) Neural population dynamics underlying the planning of multiple movements in parallel, *NeuroFrance*, Lyon, FR (Talk)

[13] <u>Meirhaeghe N</u>, Riehle A, Brochier T (2023) Parallel movement planning achieved via an optimal preparatory state in motor cortex, *CORTICO BCI Conference*, Paris, FR (Talk)

[12] <u>Meirhaeghe N</u>, Riehle A, Brochier T (2022) Parallel planning through an optimal subspace in motor cortex, *GDR Neural Net*, Lyon, FR (Talk)

[11] <u>Meirhaeghe N</u>, Riehle A, Brochier T (2022) Parallel planning through an optimal subspace in motor cortex, *Neuromatch online conference* (Talk)

[10] <u>Meirhaeghe N</u>, Riehle A, Brochier T (2022) Planning of multiple actions in motor cortex, *Federation of European Neuroscience Societies* (FENS), Paris, FR (Poster)

[9] <u>Meirhaeghe N</u>, Sohn H, Jazayeri M (2021) A neural signature of anticipation in the macaque frontal cortex, *Computational and Systems Neuroscience* (COSYNE), virtual conference (Poster)

[8] <u>Meirhaeghe N</u>*, Sohn H*, Jazayeri M (2020) Rapid sensorimotor adaptation through cortical input control, *Computational and Systems Neuroscience* (COSYNE), Denver, CO, USA (Poster)

[7] <u>Meirhaeghe N</u>*, Sohn H*, Jazayeri M (2019) Calibrating temporal expectations through flexible tuning of neural dynamics, *Society for Neuroscience* (SfN), Chicago, IL, USA (Poster)

[6] <u>Meirhaeghe N</u>*, Sohn H*, Jazayeri M (2019) Flexible cortical dynamics in adaptive control of sensorimotor behavior, *Computational and Systems Neuroscience* (COSYNE), Lisbon, Portugal (Poster)

[5] <u>Meirhaeghe N</u>*, Sohn H*, Jazayeri M (2018) Cortical dynamics associated with multiple timescales of sensorimotor adaptation, *Society for Neuroscience* (SfN), San Diego, CA, USA (Poster)

[4] <u>Meirhaeghe N</u>, Jazayeri M (2018) A diffusive forward model for error monitoring during motor planning, *Computational and Systems Neuroscience* (COSYNE), Denver, CO, USA (Poster)

[3] <u>Meirhaeghe N</u>, Mélan C (2017) Evaluating the effects of microgravity on crew cooperation in an ecological perspective-taking task: a preliminary study, *NASA Human Research Program Investigator Workshop* (HRP IWS), Galveston, TX, USA (Poster)

[2] <u>Meirhaeghe N</u>, Mélan C (2016) Impact of microgravity on mental imagery performances in ecological perspective-taking tasks: a preliminary study, *Human-Computer Interaction in Aerospace* (HCI-Aero), Paris, France (Poster)

[1] <u>Meirhaeghe N</u>, Mélan C (2016) The role of gravity in mental rotation and perspective-taking: a preliminary study, *European Workshop on Imagery and Cognition* (EWIC), Paris, France (Talk)