

PERSONAL INFORMATION



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Sex M | Date of Birth 08/02/1970 | Nationality Italian, German

RESEARCH ACTIVITIES

Neuroscience

Electrophysiology

EEG, TMS, MEG, fMRI

Modulation of Cortical Networks

- **Physicist with a PhD in Neuroscience** and multidisciplinary interests in measuring and modulating brain function.
- **My research aim:** To improve our understanding of human brain function and dysfunction through exploration and stimulation of neural oscillations & large-scale network dynamics. I have employed several non-invasive tools of measurement (MEG, EEG, fMRI) and stimulation (TMS, TdCS) in health and disease.
- **Multi-year experience** with data analysis and modelling issues connected to these techniques. Combining TMS, EEG and drug assumption, I explored the impact of GABAergic drugs on TMS evoked responses and induced oscillations.
- **Italian National Qualification (ASN) as full professor** for the areas: Physiology (05/D1), General Psychology (11/E1)
- **Italian National Qualification (ASN) as associate professor** for the areas: Physiology (05/D1) Applied Physics (02/D1), Bioengineering (09/G2), General Psychology (11/E1)

EDUCATION AND TRAINING

JAN. 2005-SEPT. 2007

Post-doctoral fellow at ITAB, Institute of Advanced Biomedical Technologies (Leader: Prof. Gian Luca Romani), **Chieti University "G. D'Annunzio", Italy**. *Focus:* Development of innovative techniques for the localization of brain sources by means of magnetoencephalographic signals.

FEB. 2005

Ph.D. in Neuroscience at the Institute of Advanced Biomedical Technologies (ITAB), "G. D'Annunzio" University, Chieti, Italy. Dissertation title: "Detection of Coherent Brain Areas with MEG Data". Tutor: Prof. Gian Luca Romani.

MAY 2001

MS in Mathematical Physics at "La Sapienza" University, Rome (108/110). Thesis title: "Segmentation Algorithms Applied to Quantum Dots". Tutors: Prof. Brunello Tirozzi and Mario Capizzi.

APPOINTMENTS

Since SEP 2023

Associate Professor for Physiology at the University of Trento, Italy.

Since SEP 2020

Principal Investigator at the Center for Mind/Brain CIMeC, **University of Trento, Italy**. *Focus:* EEG and MEG state dependent stimulation

APR 2015-AUG 2020

Senior Researcher in the Neurology department (Leader: Prof. Ulf Ziemann), **Eberhard Karls University Hospital Tübingen, Germany**. *Focus:* EEG state dependent TMS stimulation

JAN. 2013-MAR. 2015 **Senior Researcher** in the department of 'Functional and Restorative Neurosurgery' (Leader: Prof. Alireza Gharabaghi), **Eberhard Karls University Hospital Tübingen, Germany**. *Focus:* Recovery of corticomuscular connectivity in Stroke patients.

JAN. 2010-DEC. 2012 **Senior Researcher** at the MEG Center (Leader: Prof. Niels Birbaumer), **Eberhard Karls University of Tübingen, Germany**. *Focus:* Bayesian methods for source localization and connectivity.

2005-2007 **Senior Researcher** at the O.V. Lounasmaa Lab, in the Language Perception and Production Group (Leader: Prof. Riitta Salmelin), **Helsinki University of Technology, Finland**. *Focus:* Source coherence analysis and localization of sources of cortical rhythms by means of the Relevance Vector Machine.

TEACHING
Supervision of PhD Students

Since 2020 **CIMeC, University of Trento:**
Arianna Brancaccio, Martina Amerighi

Since 2010 **University Clinic of Tübingen (Departments of Neurology, Neurosurgery, MEG Center)**
Supervision of Master Students
Debora Desideri, Chaitanya Lanka, Mathias Vukelic, Kevin Kern, Ramin Azodi-Aval, Erick Ortiz, Kousik Sarathy, Simeon Knieling, Dominic Kraus, Sara Pizzamiglio (now at University of East London). Isabella Premoli (now post-doc at King's College London). Anette Giani.

Courses and Seminars
Antti Jalava, Timo Saarinen (**Aalto University, Espoo, Finland**), Mark Olenik (now PhD student at Bristol University), Debora Desideri (University Roma3, Italy, Diandra Brkcić ("La Sapienza" University, Rome, Italy. Now PhD student at Aston University, Birmingham)

Summer Semester 2020/21, 2021/22: Course for Cognitive Science Master students: "Advanced Hands-on MEG-EEG Data Analysis" **University of Trento**

Summer Semester 2020/21, Winter Semester 2021/22: Course for Cognitive Science Master students: "Multimodal Electrophysiological Recordings and Stimulation" **University of Trento**

Winter Semester 2012/13, 13/14, 14/15, 15/16, 16/17, 17/18, 18/19, 19/20: Course for Medicine students: Title: "Aktuelle Ansätze der EEG- und MEG-Forschung" (Current Approaches in EEG and MEG Research) **Institute for Medical Psychology, Eberhard-Karls-University of Tübingen**

Summer Semester 2010/11, 11/12, 12/13, 13/14 15/16, 16/17, 17/18, 18/19, 19/20: Course for Clinical Psychology students: Title: "Inverse Probleme und Lösungsmethoden für MEG/EEG" (Inverse Problems and Solution Methods) **Institute for Medical Psychology, Eberhard-Karls-University of Tübingen**

April 15-17th, 2011: Series of seminars for PhD Students. Title: "MEG and the new perspectives for brain imaging non-invasive techniques" Department of Psychobiology and Physiological Psychology, faculty of Psychology. Invited by **Prof. A. M. Proverbio, University of Milano-Bicocca, Milan, Italy**

February 24-25th, 2007: Master Class + Hands-on Session. Title: "Plasticity of the motor system in patients with pre- and perinatally acquired lesions" within the

conference “The motor act: planning, organization, timing” organized by da SIPI – Italian Society for Integrated Psychotherapy, **Casoria (NA), Italy**

Academic Year 2006-2007: Tenured Professor for the “Applied Physics” Academic Course, Faculty of Economics, University G. D'Annunzio, **Chieti-Pescara, Italy.**

February 19-20th, 2005: Master Class + Hands-on Session. Title: “New Neuroimaging Techniques” organized by SIPI – Italian Society for Integrated Psychotherapy, Casoria (NA), Italy.

Academic Year 2005-2006 Tenured Professor for the “Applied Physics” academic course, Faculty of Economics, University G. D'Annunzio, **Chieti-Pescara, Italy.**

From Academic Year 2001-2002 to 2006-2007: Teaching Assistant for the “Applied Physics” Academic Course, Faculty of Medicine, University G. D'Annunzio, **Chieti-Pescara, Italy.**

Academic Year 2005-2006: Teaching Assistant for the “Applied Physics” Academic Course, Degree Course of Chemistry and Pharmacy, Faculty of Pharmacy, University G. D'Annunzio, **Chieti-Pescara, Italy**

Academic Year 2005-2006: Teaching Assistant for the “Applied Physics” Academic Course, Degree Course of Pharmacy, Faculty of Pharmacy, University G. D'Annunzio, Chieti-Pescara, Italy

Academic Year 2004-2005: Tenured Professor for the “Applied Physics” academic course, Faculty of Economics, University G. D'Annunzio, **Chieti-Pescara, Italy.**

Academic Year 2004-2005: Teaching Assistant for the “Applied Physics” Academic Course, Degree Course of Chemistry and Pharmacy, Faculty of Pharmacy, University G. D'Annunzio, **Chieti-Pescara, Italy**

Academic Year 2003-2004: Teaching Assistant for the “Applied Physics” Academic Course, Degree Course of Chemistry and Pharmacy, Faculty of Pharmacy, University G. D'Annunzio, **Chieti-Pescara, Italy**

Academic Year 2003-2004: Teaching Assistant for the “Applied Physics” Academic Course, Faculty of Economics, University G. D'Annunzio, **Chieti-Pescara, Italy.**

Invited Talks

March 12th 2022: DGKN 9th Conference on Non-Invasive Brain Stimulation: Title: “EEG Cortical Source Localization” invited by **Mario Rosanova, University of Milan.**

9. December 4th 2022: SIN, 52° Congresso della Società Italiana di Neurologia, Milano: Title: “Basi neurofisiologiche e metodologiche della TMS-EEG” invited by Lorenzo Rocchi, University of Cagliari.

8. December 3rd 2022: “Transcranial Brain Stimulation in Cognitive Neuroscience” Workshop, Rovereto: Title: “Real-time Brain-state dependent EEG-TMS Stimulation”

invited by the Local Committee. CIMeC, University of Trento

7. September 4th 2022: ICCN, Geneva (Switzerland): Session Organizer and Chair of the session 5.3g: #10 “Pharmaco-TMS-EEG and Pharmaco- EEG”.

Speaker for the talk entitled: “Pharmaco-TMS-EEG: the glutamatergic system”.

6. August 20th 2022: Biomag Satellite Workshop, Birmingham (UK). Session title: “Connecting to the networks of the human brain: combining TMS with EEG or MEG for closed-loop neurostimulation”. Title of the talk:” Source-localization of

individual brain oscillations in real-time using LCMV beamforming” Organizer: Risto Ilmoniemi, Aalto University, Finland.

5. March 12th 2022: DGKN 9th Conference on Non-Invasive Brain Stimulation, Würzburg, Germany: Title: “EEG Cortical Source Localization” invited by Mario Rosanova, University of Milan.

4. June 21st: Brain Products Italy, Rome: Workshop Teorico e pratico TMS-EEG. Title:

“Real-time EEG-TMS triggered by Instantaneous Brain States” Invited by: Gianluigi Rubino, Brain Products Italy

April 15th 2021: Workshop “Non-invasive Mathematics”: Title: “Non-invasive Real-time Stimulation as a Tool of Research and Rehabilitation” **Organizer: Prof. A. Sorrentino**

https://www.youtube.com/watch?v=xz4a9LPLlpA&t=675s&ab_channel=ISTITUTONAZIONALEDIALTAMATEMATICA

March 10th 2021: DGKN 8th Conference on Non-Invasive Brain Stimulation: Title: “Analysis and interpretation of TMS-evoked EEG potentials” invited by **Prof. U. Ziemann (University of Tuebingen, Germany).**

November 8th 2020: DGKN 7th Conference on Non-Invasive Brain Stimulation: Title: “Real-time source EEG phase triggered TMS: methods and results” invited by **Dr. C. Zrenner (University of Tuebingen, Germany).**

September 8th 2017: Göttingen, 6th International Conference on Non-Invasive Brain Stimulation: Title: “Real-time source and sensor-level EEG state triggered TMS with millisecond resolution” invited by **Dr. R. Polania (University of Zürich, Switzerland).**

September 5th 2013: Tübingen, Department of Computer Science: Title: “Neural correlates of the motor act of grasping” invited by **Prof. M. Butz (University of Tübingen, Germany).**

November 4-7th 2012: Asilomar, California: Asilomar Conference on Signals, Systems, and Computers. Title: “New Perspectives in MEG Functional Connectivity” invited by **Prof. H. Preissl (University of Tübingen, Germany).**

May 2012: Frankfurt, MEG Center: “Bayesian Methods for M/EEG Source Localization” invited by **Prof. M. Wibral (Max Planck Institute, Frankfurt, Germany).**

April 2011: University of Milano-Bicocca, Milan, Italy. Title: “MEG and the New Perspectives for Brain Imaging Non-invasive Techniques” invited by **Prof. A. M. Proverbio (Department of Psychology, University of Bicocca, Milan, Italy).**

March 2012: Tübingen, MEG Spring School for Neuroscience Title: “Brain Functional Connectivity Discovered by means of MEG Methods and Experiments” invited by **Prof. C. Braun (CIN, Center for Integrative Neuroscience, Tübingen, Germany).**

October 2010: Frankfurt, ESI, Title: “Cortico-cortical connectivity methods for electrophysiological Signals” invited by **Prof. P. Fries, (ESI, Frankfurt, Germany).**

June 2010: London, UCL, Title: “Bayesian Algorithms in SPM8: Methods and Accuracy” invited by **Prof. K. Friston (University College London, UK).**

September 2009: Frankfurt, MPI, Title: “Interaction of Brain Areas studied by means of algorithms for Chaotic Oscillators” invited by **Prof. P. Uhlhaas (Max Planck Institute Frankfurt, Germany, now University of Glasgow, UK).**

February 2008: Glasgow, Title: “MEG Source Connectivity in Children with Early Acquired Brain Lesions” invited by **Prof. J. Gross (University of Glasgow, UK).**

October 2007: Hangzhou, Title: “Abnormal Cerebro-cerebral Connectivity in Children with Early Brain Injuries” invited by **Prof. K. Sekihara (University of Tokio, Japan)**.

September 2007: Title: “Methods for EEG and MEG Source Localization and Connectivity” **Rovereto**, invited by **Prof. C. Braun (University of Trento, Italy)**.

September 2007: Helsinki, Title: “Insights from Granger Causality on Cortico-cortical Connectivity” invited by **Prof. R. Salmelin (Aalto University, Finland)**.

September 2006: Chieti, ISBET International Society for Brain Electromagnetic Topography Title: “Cortico-cerebellar Coherence in Patients with Perinatally Acquired Brain Lesions” invited by **Prof. Gian Luca Romani (“G. D’Annunzio” University, Chieti, Italy)**.

August 2006, Vancouver: BIOMAG Title: “Functional Connectivity in Patients with Perinatally Acquired Brain Lesions” invited by **Prof M Hamalainen (MIT, Boston, USA)**.

June 2005: Tübingen, Title: “Coherence as a Tool for Functional Connectivity in EEG and MEG data” invited by **Prof. N. Birbaumer (Eberhard Karls University Tübingen, Germany)**.

May 2004: Zürich, Title: “Beamforming Methods for source Localization: an Overview” invited by **Dr. R.D. Pascual Marqui (University of Zürich, Switzerland)**.

January 2002: L'Avana, Cuba. NAISO Congress on neuro fuzzy technologies, Title: “A Visual Segmentation Algorithm Applied to Quantum Dots” invited by the organizing committee.

PERSONAL SKILLS

Mother Tongue

Italian

Other Languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken Interaction	Spoken Production	
English	C2	C2	C2	C2	C2
German	C2	C2	C2	C1	B2
French	B1	C1	B1	B1	B1
Spanish	A2	B2	A1	A2	A1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user

Referee Activity

NeuroImage (Elsevier), *Brain Stimulation* (Elsevier), *Brain Topography* (Springer), *Frontiers in Neurology*, *Plos One* (Plos.com), *IEEE Transactions in Biomedical Engineering* (IEEE), *Journal of Neuroscience Methods* (Elsevier), *IET Science, Measurement & Technology* (Thomson Reuters), *Journal of Experimental Psychology* (APA), *European Journal of Neuroscience* (Blackwell), *Brain Research Bulletin* (Elsevier), *Cognitive Processing* (Springer).

GRANTS WON AS P.I.

2012

Title: The modulatory effect of performance rate on brain motor network functional connectivity. **35000 € from CIN, Werner Reichardt Centre for Integrative Neuroscience, Eberhard-Karls-University of Tübingen, Germany.**

- 2010** **Title:** Mapping human brain functions: optimized Bayesian filters for source localization. **37000 € from CIN, Werner Reichardt Centre for Integrative Neuroscience, Eberhard-Karls-University of Tübingen, Germany.**
- 2009** **Title:** Bayesian Models for Source reconstruction. **24000 € from Jan and Antti Wihuri Foundation, Finland.**
- 2006** **Title:** MEG and EEG Functional Connectivity. **10000 € from Regione Abruzzo, Italy.**
- 2003** **Title:** MEG Brain Activity Reconstruction. **12000 € from “La Sapienza” University, Rome, Italy.**

GRANTS WON AS coP.I.

- 2023-2025** Life Science Hub Diagnostica Avanzata - INNOVA Italian network of excellence for advanced diagnosis”. **Sponsor:** Ministero Salute-MINSAL **Bando:** MinSalute_Piano Nazionale per gli investimenti Complementari al PNRR_PNC E.3 “Ecosistema innovativo della Salute”
- 2023-2025** European Research Council (ERC Synergy) under the European Union’s Horizon 2020 Research and Innovation Programme (ConnectToBrain; grant agreement no. 810377)
- 2022-2025** **Title:** “Dynamic reorganization of motor cortex activity in Stroke patients: a TMS-EEG study” 50.000 € from South Tyrolean Fund for the Promotion of scientific Research, SFPR.
- 2022-2025** **Title:** Twinning for Excellence in Non-Invasive Brain Stimulation in Western Balkans (TWINNIBS) Horizon Twinning Grant TWINNIBS - 101059369 - GAP-101059369 1.200.000 € from Horizon Europe
- 2017-2020** **Title:** Real-time EEG-TMS Technology Transfer Grant 03EFJBW169 - 971.678 € from BMWi NEUROSYN
- 2019-2022** **Title:** Real-Time EEG and VR Neurorehabilitation REHALITY 13GW0213A - 960.792 € from BMBF

PUBLICATIONS

- Patent** **Italian Patent nr. IT1323655** for the automatic image segmentation algorithm described in detail in the following publication on Journal of Vacuum Science and Technology B:
Belardinelli P., Mastacchi A., Raffone A., Tirozzi B.: **Title:** “An Automatic Image Segmentation Algorithm for Quantum Dots Images”

- Profile of Publications** List of publications with 4600 citations (H-Index = 32) reported on my Scholar Google profile:
http://scholar.google.it/citations?hl=en&user=aDG32yYAAAAJ&view_op=list_works&cstart=20

- Peer Reviewed Publications** **73.** L Haxel; O Ahola; **P Belardinelli**; M Ermolova; D Humaidan; J H. Macke U Ziemann, **(2025)** "Decoding Motor Excitability in TMS Using EEG-Features: An Exploratory Machine Learning Approach," in **IEEE Transactions on Neural Systems and Rehabilitation Engineering**, vol. 33, pp. 103-112, 2025, doi: 10.1109/TNSRE.2024.3516393.

72. A. Brancaccio, D. Tabarelli, A. Zazio, G. Bertazzoli, J. Metsomaa, U. Ziemann, M. Bortoletto, **P. Belardinelli (2024)** "Towards the definition of a standard in TMS-EEG data preprocessing", **NeuroImage**, **301**, doi:10.1016/j.neuroimage.2024.120874.
71. F. Leone , A. Caporali , A. Pascarella , C. Perciballi , O. Maddaluno , A. Basti , **P. Belardinelli**, L. Marzetti , G. Di Lorenzo , V. Betti , Investigating the Impact of the Regularization Parameter on EEG Resting-State Source Reconstruction and Functional Connectivity Using Real and Simulated Data, **NeuroImage (2024)**, doi: 10.1016/j.neuroimage.2024.120896
70. Ermolova M, Metsomaa J, **Belardinelli P**, Zrenner C, Ziemann U. (2024) "Blindly separated spontaneous network-level oscillations predict corticospinal excitability." **Journal of neural engineering**. 2024;21(3). doi:10.1088/1741-2552/ad5404
69. Vetter DE, Zrenner C, **Belardinelli P**, Mutanen T, Kozák G, Marzetti L, Ziemann U. (2023): "Targeting motor cortex high-excitability states defined by functional connectivity with real-time EEG-TMS" **Neuroimage**. 2023 15;284:120427. doi: 10.1016/j.neuroimage.2023.120427.
68. Hernandez-Pavon, J.C., Veniero, D., Bergmann, T.O., **Belardinelli, P.** Ziemann, U., Ilmoniemi, R.J. (2023): "TMS combined with EEG: Recommendations and open issues for data collection and analysis" **Brain Stimulation**, 2023, 16(2), pp. 567–593 doi: 10.1016/j.brs.2023.02.009
67. Gordon P, Song Y, Jovellar B, **Belardinelli P**, Ziemann U (2023): "Untangling TMS-EEG responses caused by TMS versus sensory input using optimized sham control and GABAergic challenge" **Journal of Physiology**, 601(10), pp. 1981–1998 doi: 10.1113/JP283986
66. Bai, Y., **Belardinelli, P.**, Thoennes, C., Ziemann, U., Mengel, A.(2023): "Cortical reactivity to transcranial magnetic stimulation predicts risk of post-stroke delirium" **Clinical Neurophysiology** 148, pp. 97–108 doi:10.1016/j.clinph.2022.11.017
65. Zrenner C, Kozák G, Schaworonkow N, Metsomaa J, Baur D, Vetter D, Blumberger JM, Ziemann U, **Belardinelli P (2023)**: "Corticospinal excitability is highest at the early rising phase of sensorimotor μ -rhythm" **NeuroImage**, 266, 119805, doi: 10.1016/j.neuroimage.2022.119805.
64. Julkunen P, Kimiskidis VK, **Belardinelli P (2023)**: "Special issue on TMS-EEG methods, data analysis and processing" **Journal of Neuroscience Methods** 383, 109735. doi: 10.1016/j.jneumeth.2022.109735.
63. Gordon P, Song Y, Jovellar B, **Belardinelli P**, Ziemann U (2022): "No evidence for interaction between TMS-EEG responses and sensory inputs" **Brain Stimulation** doi:10.1016/j.brs.2022.12.010
62. Topka M, Schneider M, Zrenner C, **Belardinelli P**, Ziemann U, Weiss D (2022): "Motor cortex excitability is reduced during freezing of upper limb movement in parkinson's disease" **npj Parkinson's Disease** 8(161) doi:10.1038/s41531-022-00420-w
61. Bai Y, **Belardinelli P**, Thoennes C, Blum C, Baur D, Laichinger K, Lindig T, Ziemann U, Mengel A. (2022): "Cortical reactivity to transcranial magnetic

- stimulation predicts risk of post-stroke delirium" **Clinical Neurophysiology**. 2022 **1388-2457 (22)00960-9**. doi: 10.1016/j.clinph.2022.11.017.60.
60. Zrenner C*, **Belardinelli P***, Gordon P, Stenroos M, Ermolova M, Zrenner B, Ziemann U, (2022): "μ-rhythm phase from somatosensory but not motor cortex correlates with corticospinal excitability in EEG-triggered TMS" **Journal of Neuroscience Methods** **379**, 109662, doi:10.1016/j.jneumeth.2022.109662
*First Authors
59. Gordon P, **Belardinelli P**, Stenroos M, Ziemann U, Zrenner C (2022) "Prefrontal theta phase-dependent rTMS-induced plasticity of cortical and behavioral responses in human cortex" **Brain Stimulation** **15(2)**: 391-402 doi:10.1016/j.brs.2022.02.006
58. Tabarelli D, Brancaccio A, Zrenner C., **Belardinelli P.** (2022) "Functional Connectivity States of Alpha Rhythm Sources in the Human Cortex at Rest: Implications for Real-Time Brain State Dependent EEG-TMS" **Brain Sciences** **12(3)**, 348; doi: 10.3390/brainsci12030348
57. Julkunen P, Kimiskidis VK, **Belardinelli P.** (2022): "Bridging the gap: TMS-EEG from lab to clinic" **Journal of Neuroscience Methods** doi: 10.1016/j.jneumeth.2022.109482.
56. Bai Y, **Belardinelli P**, Ziemann U. (2022) "Bihemispheric sensorimotor oscillatory network states determine cortical responses to transcranial magnetic stimulation. **Brain Stimulation** **15(1)**:167-178. doi: 10.1016/j.brs.2021.12.002.
55. Brancaccio A, Tabarelli D, **Belardinelli P.** (2022) "A New Framework to Interpret Individual Inter-Hemispheric Compensatory Communication after Stroke" **Journal of Personalized Medicine** **12(1)**:59. <https://doi.org/10.3390/jpm12010059>
54. McDermott EJ, Raggam P, Kirsch S, **Belardinelli P**, Ziemann U, Zrenner C (2022)"Artifacts in EEG-based BCI therapies: friend or foe?" **Sensors** **22 (1)**, 96
53. Metsomaa J, **Belardinelli P**, Ermolova M, Ziemann U, Zrenner C (2021) "Causal decoding of individual cortical excitability states" **NeuroImage - ISSN:1053-8119** vol. 245 doi: 10.1016/j.neuroimage.2021.118652.
52. Gordon, P. C., Jovellar, D. B., Song, Y., Zrenner, C., **Belardinelli, P.**, Siebner, H. R., Ziemann, U (2021) "Recording brain responses to TMS of primary motor cortex by EEG – utility of an optimized sham procedure" **NeuroImage - ISSN:1053-8119** vol. 245.doi:10.1016/j.neuroimage.2021.118708. pp.1187-1208
51. Gordon P, Dörre S, **Belardinelli P**, Stenroos M, Zrenner B, Ziemann U, Zrenner C (2021) "Prefrontal Theta-Phase Synchronized Brain Stimulation With Real-Time EEG-Triggered TMS" **Frontiers in Human Neuroscience** **15** doi: 10.3389/fnhum.2021.691821 ISSN=1662-5161
50. McDermott EJ; Metsomaa J.; **Belardinelli P.**; Grosse-Wentrup M.; Ziemann U.; Zrenner C. (2021) "Predicting motor behavior: an EEG signal processing pipeline to detect relevant brain-states with potential therapeutic relevance for VR-based neurorehabilitation" **Virtual Reality** pp 1-23 doi:10.1007/s10055-021-00538-x
49. **Belardinelli P.**, Koenig F, Liang C., Desideri D., Premoli I., Gordon P., Zrenner C., Müller-Dahlhaus F., Ulf Ziemann (2021): "TMS-EEG signatures of glutamatergic neurotransmission in human cortex" **Scientific Reports** **11**, 8159. <https://doi.org/10.1038/s41598-021-87533-z>

48. Rogasch N.C., Zipser C., Darmani G., Mutanen T.P., Biabani M., Zrenner C., Desideri D., **Belardinelli P.**, Müller-Dahlhaus F. & Ulf Ziemann (2020): "The effects of NMDA receptor blockade on TMS-evoked EEG potentials from prefrontal and parietal cortex" **Scientific Reports**, **10** (3168) doi: [10.1038/s41598-020-59911-6](https://doi.org/10.1038/s41598-020-59911-6)
47. Zrenner B, Zrenner C, Gordon P, **Belardinelli P**, McDermott EJ, Soekadar SR, Falgatter AJ, Ziemann U, Mueller-Dahlhaus F (2020) "Brain oscillation-synchronized stimulation of the left dorsolateral prefrontal cortex in depression using real-time EEG-triggered TMS" **Brain Stimulation** **13**(1) doi:[10.1016/j.brs.2019.10.007](https://doi.org/10.1016/j.brs.2019.10.007) pp 197-205
46. Desideri D., Zrenner C., Ziemann U., **Belardinelli P.** (2019): "Phase of sensorimotor μ -oscillation modulates cortical responses to TMS of the human motor cortex" **Journal of Physiology**, **597**(23), doi: [10.1113/JP278638](https://doi.org/10.1113/JP278638), pp 5671-5686
45. **Belardinelli P.**, Azodi-Avval R., Ortiz E., Naros G., Grimm F., Weiss D., Gharabaghi A. (2019): "Intraoperative localization of spatially and spectrally distinct resting-state networks in Parkinson's disease" **Journal of Neurosurgery**, **1** (aop), doi: [10.3171/2018.11.JNS181684](https://doi.org/10.3171/2018.11.JNS181684) pp. 1-9
44. **Belardinelli P.**, Biabiani M., Blumberger D.M., Bortoletto M., Casarotto S., et al. (2019): "Reproducibility in TMS-EEG studies: A call for data sharing, standard procedures and effective experimental control" **Brain Stimulation**, **12**(3), doi: [10.1016/j.brs.2019.01.010](https://doi.org/10.1016/j.brs.2019.01.010), pp. 787–790
43. Nikmaram N, Scholz D., Großbach M, Schmidt S, Spogis J, **Belardinelli P**, Müller-Dahlhaus F, Remy J, Ziemann U, Rollnik J, Altenmüller E (2019): "Musical Sonification of Arm Movements in Stroke Rehabilitation Yields Limited Benefits" **Frontiers in Neuroscience**, **13**, doi=[10.3389/fnins.2019.01378](https://doi.org/10.3389/fnins.2019.01378) ISSN=1662-453X
42. Stefanou MI, Baur D, **Belardinelli P**, Blum C., Desideri D., Ziemann U, Zrenner C (2019): "Brain state-dependent brain stimulation with real-time EEG-triggered TMS" **JoVE, Journal of Visualized Experiments**, **150**, e59711, doi: [10.3791/59711](https://doi.org/10.3791/59711), pp.1-7
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