

PERSONAL INFORMATION



Paolo Belardinelli, PhD

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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 area: 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

OCT. 2007-NOV. 2009 **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.**

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 Aquired 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 Aquired 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.

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- 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.

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- 2023-2025** **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 NEUROSYNC
 - 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 3600 citations (H-Index = 30) reported on my Scholar Google profile:
http://scholar.google.it/citations?hl=en&user=aDG32yYAAAAAJ&view_op=list_works&cstart=20

Peer Reviewed Publications

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
47. Zrenner B, Zrenner C, Gordon P, **Belardinelli P**, McDermott EJ, Soekadar SR, Falgatter AJ, Ziemann U, Müller-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 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
41. Desideri D., Zrenner C., Caldana Gordon P., Ziemann U., **Belardinelli P.** (2019): “Nil effects of μ -rhythm phase-dependent burst-rTMS on cortical excitability in humans: A resting-state EEG and TMS-EEG study” **Plos one** **13(12)**: e0208747. doi: [10.1371/journal.pone.0208747](https://doi.org/10.1371/journal.pone.0208747)
40. Schaworonkow N, Caldana PG, **Belardinelli P**, Ziemann U., Bergman TO, Zrenner C. (2018): “ μ -rhythm extracted with personalized EEG filters correlates with corticospinal excitability in real-time phase-triggered EEG-TMS” **Frontiers in Neuroscience** **12**, 954 doi: [10.3389/fnins.2018.00954](https://doi.org/10.3389/fnins.2018.00954)
39. Stefanou MI, Desideri D, Belardinelli P, Zrenner C, Ziemann U (2018): “Phase synchronicity of μ -rhythm determines efficacy of interhemispheric communication between human motor cortices” **Journal of Neuroscience** **38 (49)**, pp 10525-10534 doi: [10.1523/JNEUROSCI.1470-18.2018](https://doi.org/10.1523/JNEUROSCI.1470-18.2018)
38. Gordon P.C., Zrenner C., Desideri D., **Belardinelli P.**, Zrenner B., Ziemann U. (2018): “Comparison of cortical EEG responses to realistic sham versus real TMS of human motor cortex” **Brain Stimulation** **11(6)**, pp 1322-1330, doi: [10.1016/j.brs.2018.08.003](https://doi.org/10.1016/j.brs.2018.08.003)
37. Gordon P.C., Zrenner C., Desideri D., **Belardinelli P.**, Zrenner B., Brunoni A.R., Ziemann U. (2018): “Modulation of cortical responses by transcranial direct current stimulation of dorsolateral prefrontal cortex: a resting-state EEG and TMS-EEG study” **Brain Stimulation**, **11(5)**, doi: [10.1016/j.brs.2018.06.004](https://doi.org/10.1016/j.brs.2018.06.004), pp. 1024-1032
36. **Belardinelli P.** (co-first), Zipser CM, Premoli I, Castellanos N, Rivolta D, Heidegger T, Müller-Dahlhaus F and Ziemann U (2018): “Cortical Excitability and Interhemispheric Connectivity in Early Relapsing–Remitting Multiple Sclerosis Studied With TMS-EEG” **Frontiers in Neuroscience** **12**:393. doi: [10.3389/fnins.2018.00393](https://doi.org/10.3389/fnins.2018.00393)

35. Dietrich S, Hertrich I, Müller-Dahlhaus F, Ackermann H, Belardinelli P, Desideri D, Seibold VC, Ziemann U: (2018): "Reduced Performance During a Sentence Repetition Task by Continuous Theta-Burst Magnetic Stimulation of the Pre-supplementary Motor Area" **Frontiers in Neuroscience** 12:361. doi: 10.3389/fnins.2018.00361
34. Premoli I, Királi J, Müller-Dahlhaus, F, Zipser C, Rossini P, Zrenner C, Ziemann U, **Belardinelli P** (2018), "Short-interval and long-interval intracortical inhibition of TMS-evoked EEG potentials" **Brain Stimulation** 11(4) doi: 10.1016/j.brs.2018.03.008 pp 818-829
33. Zrenner C., Desideri D., **Belardinelli P.**, Ziemann U. (2018): "Real-time EEG-defined excitability states determine efficacy of TMS-induced plasticity in human motor cortex" **Brain Stimulation** 11(2), doi: 10.1016/j.brs.2017.11.016 pp. 374-389
32. Premoli I., Bergman T.O., Fecchio M, Rosanova M., Ziemann U., **Belardinelli P.** (2017): "The impact of GABAergic drugs on TMS-induced brain oscillations in human motor cortex" **NeuroImage** 163 doi: 10.1016/j.neuroimage.2017.09.023 pp. 1–12
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