

## **Silvia Tommasin**

### Job Position:

- 2024 – Associate Professor at UniCamillus, Rome
- 2022 to - : Ricercatore a Tempo Determinato A at Dipartimento di Neuroscienze Umane, Sapienza University of Rome;
- 2021 to 2022: Researcher at Fondazione Santa Lucia IRCCS;
- 2017 to 2021: Postdoctoral researcher at Sapienza University, Human Neuroscience Department;
- 2015-2016: Postdoctoral researcher at Enrico Fermi Center;
- 2014: Postdoctoral researcher at Weizmann Institute of Science;
- 2013: Postdoctoral researcher at Hebrew University of Jerusalem;
- 2010-2012: Postdoctoral researcher at Tel Aviv University, Astronomy Department.

### Education:

- National Scientific Qualification for the position of Associate Professor in the academic recruitment field 02/D1 - FISICA APPLICATA, DIDATTICA E STORIA DELLA FISICA.
- Registration with the Interregional Order of Chemists and Physicists of Lazio – Umbria – Abruzzo and Molise
- Board certification in Health Physics, Sapienza University of Rome, 2022;
- PhD in Astronomy, Physics Department, Sapienza University of Rome, 2010;
- Master of Science in Physics, Sapienza University of Rome, 2006.

## Teaching:

1' semester 2008: Supplementary teaching activities for the Laboratory of Systems and Signals classes, Dipartimento di Fisica, Sapienza Università di Roma.

November 5<sup>th</sup>-7<sup>th</sup>, 2015: Lecturer at the Medical Physics School "Quality Control in MR advanced techniques", at Spedali Civili di Brescia.

aa 2019-2020: Co-supervisor of the thesis in Medicine and Surgery, Faculty of Pharmacy and Medicine, Sapienza Università di Roma, su "Functional connectivity of sensorimotor cerebellum in patients with multiple sclerosis and no clinical disability".

aa 2019-2020: Co-supervisor of the thesis in Medicine and Surgery, Faculty of Pharmacy and Medicine, Sapienza Università di Roma, su "Multiple sclerosis and cognitive decline: fMRI study of thalamic connectivity".

aa 2017/2018 – aa 2020/2021: Co-tutor of the PhD thesis in Clinical and Experimental Neuroscience, Sapienza Università di Roma, su "Functional and structural alterations in pediatric patients with tourette and obsessive-compulsive disorder".

aa 2017/2018 – aa 2020/2021: Co-tutor of the PhD work in Clinical and Experimental Neuroscience, Sapienza Università di Roma.

aa 2022/2023 – 2023/2024: Exam-recording lecturer for the Medical Physics course at Università Sapienza di Roma, Faculty of Medicine and Surgery (qualifying for the practice of Medical Doctor, Surgeon) - Roma Azienda Ospedaliera Sant'Andrea

aa 2022/2023 – 2023/2024: Lecturer in Applied Physics for the integrated course of Molecular Foundations of Life at Università Sapienza di Roma, Degree Program A in Speech and Language Therapy (qualifying for the profession of Speech Therapist) - Roma Azienda Policlinico Umberto I

aa 2022/2023 – 2023/2024: Lecturer in Applied Physics for the integrated course of Molecular Foundations of Life at Università Sapienza di Roma, Degree Program in Psychiatric Rehabilitation Techniques (qualifying for the health profession of Psychiatric Rehabilitation Technician) - Roma Azienda Policlinico Umberto I

aa 2023/2024: Lecturer in Medical Physics at Università Sapienza di Roma, Faculty of Medicine and Surgery "E" (qualifying for the practice of Medical Doctor, Surgeon) - Polo Pontino

Known foreign languages:

- English: Full professional proficiency;
- German: Limited proficiency;
- Spanish: Elementary proficiency;
- Hebrew: Elementary proficiency.

Scientific collaborations:

- Harvard Medical School, Massachusetts General Hospital, MS;
- The Italian Neuroimaging Network Initiative (INNI): Ospedale San Raffaele e l'Università Vita e Salute di Milano; Seconda Università di Napoli/Istituto Neurologico per la Diagnosi e la Cura Hermitage and Università di Siena;
- National Research Council (CNR);
- University of Turku;
- Deakin University, Cognitive Neuroscience Unit, School of Psychology, Burwood, Australia.

Awards:

- 2013 Paola De Mansi Fellowship, awarded by Italian Foreign Ministry and Israeli Center of Research Excellence.

Grants:

- 07/2023: PRIN 2022 “The role of MRI and artificial intelligence for improving disease classification and prediction of clinical worsening in multiple sclerosis” Role: Collaborator
- 02/2023: FISM grant (Fondazione Italiana Sclerosi Multipla) Impact of imaging markers at high and ultra-high field MRI on MS disability progression”. Role: Collaborator.

- 02/2023: FISM grant (Fondazione Italiana Sclerosi Multipla) for the project “The association between white matter chronic neuroinflammation and degeneration in multiple sclerosis: a combined 11C- PBR28 PET-MRI study”. Role: Collaborator.
- 03/2023: Sapienza University of Rome (Italy) – International inter-university agreement grant.
- 12/2021: Sapienza University of Rome (Italy) grant – “Brain structural damage and microglia activation in multiple sclerosis by combining ultra-high field 7T MRI and simultaneous C11-PBR28 PET- 3T MRI”. Role: collaborator.
- 10/2020: Sapienza University of Rome (Italy) grant – “Nanocomposito funzionalizzato con Istidina a base di Nanoparticelle di Oro Radiomarcate: Diagnosi precoce in patologia neurologica e gastroenterica in pazienti con morbo Celiaco tramite l'utilizzo di un innovativo radiofarmaco per la rilevazione mediante imaging molecolare di depositi di Nichel”. Role: collaborator.
- 09/2020: Italian Ministry of Health – call for targeted research 2019 – young researchers (GR-2019-12370095). Title: “ERMES: Exergaming for cognitive Rehabilitation in Multiple Sclerosis: a randomized trial to test efficacy and a machine learning approach to drive prescription”. Role: co-PI.
- 10/2018: Sapienza University of Rome (Italy) grant – “Cross-sectional and longitudinal measures of brain atrophy in multiple sclerosis by MRI: the effect of treatment switching”. Role: collaborator.
- 10/2017: Sapienza University of Rome (Italy) grant – “Combined modification and reorganization of the brain structural and functional networks in Multiple Sclerosis”. Role: collaborator.

Main fields of interest:

Analytical Model; Artificial Intelligence; Neuroimaging; Advanced MRI techniques; Multiple Sclerosis; Neurodegenerative diseases.

Scientific publications:

H index: 15; Total number of citations 795 (Scopus).

### Selected publications:

- Younger E, Ellis EG, Parsons N, Pantano P, **Tommasin S**, Caeyenberghs K, Benito-León J, Romero JP, Joutsa J, Corp DT. Mapping Essential Tremor to a Common Brain Network Using Functional Connectivity Analysis. (2023) *Neurology.*, 101(15):e1483-e1494. DOI: 10.1212/WNL.0000000000207701.
  
- De Rosa AP, Esposito F, Valsasina P, d'Ambrosio A, Bisecco A, Rocca MA, **Tommasin S**, Marzi C, De Stefano N, Battaglini M, Pantano P, Cirillo M, Tedeschi G, Filippi M, Gallo A; INNI Network. Resting-state functional MRI in multicenter studies on multiple sclerosis: a report on raw data quality and functional connectivity features from the Italian Neuroimaging Network Initiative. (2023) *J Neurol.*, 270(2):1047-1066. DOI: 10.1007/s00415-022-11479-z.
  
- Marzi C, d'Ambrosio A, Diciotti S, Bisecco A, Altieri M, Filippi M, Rocca MA, Storelli L, Pantano P, **Tommasin S**, Cortese R, De Stefano N, Tedeschi G, Gallo A; INNI Network. Prediction of the information processing speed performance in multiple sclerosis using a machine learning approach in a large multicenter magnetic resonance imaging data set. (2023) *Hum Brain Mapp.*, 44(1):186-202. DOI: 10.1002/hbm.26106
  
- Carotenuto A, Valsasina P, Schoonheim MM, Geurts JJG, Barkhof F, Gallo A, Tedeschi G, **Tommasin S**, Pantano P, Filippi M, Rocca MA; MAGNIMS Study Group. Investigating Functional Network Abnormalities and Associations With Disability in Multiple Sclerosis. (2022) *Neurology.*, 99(22):e2517-e2530. DOI: 10.1212/WNL.0000000000201264.
  
- Taloni A, Farrelly FA, Pontillo G, Petsas N, Gianni C, Ruggieri S, Petracca M, Brunetti A, Pozzilli C, Pantano P, **Tommasin S**. Evaluation of Disability Progression in Multiple Sclerosis via Magnetic-Resonance-Based Deep Learning Techniques. (2022) *Int J Mol Sci.* , 23(18):10651. DOI: 10.3390/ijms231810651.
  
- **Tommasin S**, Iakovleva V, Rocca MA, Gianni C, Tedeschi G, De Stefano N, Pozzilli C, Filippi M, Pantano P; INNI Network. Relation of sensorimotor and cognitive cerebellum functional connectivity with brain structural damage in patients with multiple sclerosis and no disability. (2022) *Eur J Neurol.*, 29(7):2036-2046. DOI: 10.1111/ene.15329
  
- Felicetti F, **Tommasin S**, Petracca M, De Giglio L, Gurreri F, Ianniello A, Nistri R, Pozzilli C, Ruggieri S. Eating Hubs in Multiple Sclerosis: Exploring the Relationship Between Mediterranean Diet and Disability Status in Italy. (2022) *Front Nutr.*, 9:882426. DOI: 10.3389/fnut.2022.882426

- Mascali, D., Moraschi, M., DiNuzzo, M., **Tommasin, S.**, Fratini, M., Gili, T., Wise, R.G., Mangia, S., Macaluso, E., Giove, F. Evaluation of denoising strategies for task-based functional connectivity: Equalizing residual motion artifacts between rest and cognitively demanding tasks(2021) *Human Brain Mapping*, 42 (6), pp. 1805-1828. DOI: 10.1002/hbm.25332
- Pasqua, G., **Tommasin, S.**, Bharti, K., Ruggieri, S., Petsas, N., Piervincenzi, C., Pozzilli, C., Pantano, P. Resting-state functional connectivity of anterior and posterior cerebellar lobes is altered in multiple sclerosis(2021) *Multiple Sclerosis Journal*, 27 (4), pp. 539-548. DOI: 10.1177/1352458520922770
- Piervincenzi, C., Petsas, N., De Giglio, L., Carmellini, M., Gianni, C., **Tommasin, S.**, Pozzilli, C., Pantano, P. Increased Within-Network Functional Connectivity May Predict NEDA Status in Fingolimod-Treated MS Patients(2021) *Frontiers in Neurology*, 12, art. no. 632917, eCollection 2021. DOI: 10.3389/fneur.2021.632917
- **Tommasin, S.**, Coccozza, S., Taloni, A., Gianni, C., Petsas, N., Pontillo, G., Petracca, M., Ruggieri, S., De Giglio, L., Pozzilli, C., Brunetti, A., Pantano, P. Machine learning classifier to identify clinical and radiological features relevant to disability progression in multiple sclerosis(2021) *Journal of Neurology*, 268(12):4834-4845. DOI: 10.1007/s00415-021-10605-7
- Ruggieri, S., Petracca, M., De Giglio, L., De Luca, F., Gianni, C., Gurreri, F., Petsas, N., **Tommasin, S.**, Pozzilli, C., Pantano, P. A matter of atrophy: differential impact of brain and spine damage on disability worsening in multiple sclerosis(2021) *Journal of Neurology*, online ahead of print. DOI: 10.1007/s00415-021-10576-9
- Pozzilli, C., Prosperini, L., **Tommasin, S.**, Gasperini, C., Barbuti, E., De Giglio, L. Dalfampridine improves slowed processing speed in multiple sclerosis patients with mild motor disability: post hoc analysis of a randomized controlled trial(2021) *Therapeutic Advances in Neurological Disorders*, 14:17562864211011286, eCollection 2021. DOI: 10.1177/17562864211011286
- **Tommasin, S.**, De Luca, F., Ferrante, I., Gurreri, F., Castelli, L., Ruggieri, S., Prosperini, L., Pantano, P., Pozzilli, C., De Giglio, L. Cognitive fatigability is a quantifiable distinct phenomenon in multiple sclerosis(2020) *Journal of Neuropsychology*, 14 (3), pp. 370-383. DOI: 10.1111/jnp.12197

- Ruggieri, S., Bharti, K., Prosperini, L., Gianni, C., Petsas, N., **Tommasin, S.**, Giglio, L.D., Pozzilli, C., Pantano, P. A Comprehensive Approach to Disentangle the Effect of Cerebellar Damage on Physical Disability in Multiple Sclerosis(2020) *Frontiers in Neurology*, 11, art. no. 529, eCollection 2020. DOI: 10.3389/fneur.2020.00529
- **Tommasin, S.**, De Giglio, L., Ruggieri, S., Petsas, N., Gianni, C., Pozzilli, C., Pantano, P. Multi-scale resting state functional reorganization in response to multiple sclerosis damage (2020) *Neuroradiology*, 62 (6), pp. 693-704. DOI: 10.1007/s00234-020-02393-0
- Moraschi, M., Mascali, D., **Tommasin, S.**, Gili, T., Hassan, I.E., Fratini, M., DiNuzzo, M., Wise, R.G., Mangia, S., Macaluso, E., Giove, F. Brain Network Modularity During a Sustained Working-Memory Task(2020) *Frontiers in Physiology*, 11, art. no. 422, eCollection 2020. DOI: 10.3389/fphys.2020.00422
- Storelli, L., Rocca, M.A., Pantano, P., Pagani, E., De Stefano, N., Tedeschi, G., Zaratini, P., Filippi, M., Valsasina, P., Sibilio, M., Preziosa, P., Gallo, A., Biseco, A., Docimo, R., Petsas, N., Ruggieri, S., **Tommasin, S.**, Stromillo, M.L., Brocci, R.T. MRI quality control for the Italian Neuroimaging Network Initiative: moving towards big data in multiple sclerosis(2019) *Journal of Neurology*, 266 (11), pp. 2848-2858. DOI: 10.1007/s00415-019-09509-4
- **Tommasin, S.**, Gianni, C., De Giglio, L., Pantano, P. Neuroimaging Techniques to Assess Inflammation in Multiple Sclerosis(2019) *Neuroscience*, 403, pp. 4-16. DOI: 10.1016/j.neuroscience.2017.07.055
- **Tommasin, S.**, De Giglio, L., Ruggieri, S., Petsas, N., Gianni, C., Pozzilli, C., Pantano, P. Relation between functional connectivity and disability in multiple sclerosis: a non-linear model(2018) *Journal of Neurology*, 265 (12), pp. 2881-2892. DOI: 10.1007/s00415-018-9075-5
- **Tommasin, S.**, Mascali, D., Moraschi, M., Gili, T., Hassan, I.E., Fratini, M., DiNuzzo, M., Wise, R.G., Mangia, S., Macaluso, E., Giove, F. Scale-invariant rearrangement of resting state networks in the human brain under sustained stimulation(2018) *NeuroImage*, 179, pp. 570-581. DOI: 10.1016/j.neuroimage.2018.06.006
- De Giglio, L., **Tommasin, S.**, Petsas, N., Pantano, P. The role of fMRI in the assessment of neuroplasticity in MS: A systematic review(2018) *Neural Plasticity*, 2018, art. no. 3419871, eCollection 2018. DOI: 10.1155/2018/3419871

- **Tommasin, S.**, Mascali, D., Gili, T., Assan, I.E., Moraschi, M., Fratini, M., Wise, R.G.,  
Macaluso, E., Mangia, S., Giove, F. Task-Related modulations of BOLD low-frequency fluctuations  
within the default mode Network (2017) *Frontiers in Physics*, 5 (JUL), art. no. 31, Epub 2017. DOI:  
10.3389/fphy.2017.00031