

# Kulikova Sofya Petrovna

(23/08/1988)



**E-mail:** SPKulikova@hse.ru

**ORCID:** 0000-0002-7079-1018

**ResearcherID:** N-9556-2015

**Scopus AuthorID:** 55344286700

## Education:

- **2015: PhD with Honors in Neuroscience** at ED3C, Université Paris-Descartes (France).
- **2011: Trinational Joint Master in Neuroscience Program** (Université de Strasbourg, France). Diploma with Honors.
- **2009: Bachelor diploma with Honors in Applied Mathematics and Physics** at Moscow Institute of Physics and Technology (MIPT, Russia), department of automatized biotechnical systems.

## Professional experience:

- **2015-present time: Senior Researcher at National Research University Higher School of Economics (HSE, Perm, Russia).**
- **2012-2015: CEA-Saclay/NEUROSPIN and INSERM 1129 (France).** Project title: Integration of multimodal imaging data for investigation of brain development.
- **2013-2014: Teaching applied physics at Ecole Centrale Paris (Paris).**
- **2014, 10-16 March: volunteer at the Brain Awareness Week.** Popular science lectures at the “Palais de la Découverte” and at “Cité des Sciences et de l'Industrie” (Paris).
- **2013, 23 August - 14 September: FENS-IBRO Imaging Summer School (Genève and Lausanne, Swiss).**
- **2013, July: Biomedical Image Analysis Summer School (Paris)**
- **2013, 12-17 March: volunteer at the Brain Awareness Week.** Popular science lectures at the Palais de la Découverte (Paris).
- **2009-2011: INSERM 666 (Strasbourg, France).** Project title: dynamics and pathophysiology of cortico-thalamic systems in schizophrenia.
- **2010, 27 September – 2 October, Electrophysiological school of Strasbourg, France.**
- **2008-2009: Institute of Higher Nervous Activity (Russian Academy of Science).** Project title: Application of a modified Bayes method for recognition of different mental states in the development of brain-computer interface (BCI).
- **2008-2009: teacher of Math's and Physics in the correspondence school of the MIPT (Moscow).**
- **2007-2009: technician at the Central Science Research Center of Chemistry and Mechanics (Moscow, Russia).**

## Computer skills:

- Python/C/C++/Pascal
- Brainvisa/Anatomist/Connectomist
- ImageJ/JavaScript
- MatLab/EEGLab
- R
- ClampFit/Datawave
- Windows/Office, Linux

## Languages:

- English, French: Fluent.
- German, Italian, Arabic: Beginner
- Native language: Russian

## Publications:

### 2016

- Pinault D., Kulikova S. P., Cornec D., Zheng T., O'Brien T.J. Genetic absence-related corticothalamic spike-and-wave discharges turn off while thalamocortical spindles turn on during the wake-sleep transition (submitted)
- Kulikova S., Hertz-Pannier L., Dehaene-Lambertz G., Poupon C., Dubois J. A new strategy for fast quantification of the myelin water fraction: Application to infants imaging (submitted).
- Limonova A., Nazarova M., Kulikova S., Dobrynina L., Konovalov R. Assessment of intra- and inter-hemispheric connectivity and functional state of hemispheres in patients with chronic stroke. (submitted)

### 2015

- Kobayashi Y., Kulikova Sofya P, Shibato J., Rakwal R., Satoh H., Pinault D., Yoshinori M. DNA Microarray Analysis Reveals Rapid Changes in Gene Expression Profiles in Rat Brain following Treatment with MK-801. // *World Journal of Biological Chemistry*. 2015. Vol. 6. No. 4
- Dubois J., Poupon C., Thirion B., Simonnet H., Kulikova S., Leroy F., Hertz-Pannier L., Dehaene-Lambertz G. Exploring the early organization and maturation of linguistic pathways in the human infant brain // *Cerebral Cortex*. 2015. P. 1-16.
- Kulikova S., Hertz-Pannier L., Dehaene-Lambertz G., Buzmakov A. V., Poupon C., Dubois J. Multi-parametric evaluation of the white matter maturation // *Brain Structure and Function*. 2015. Vol. 220. No. 6. P. 3657-3672.
- Dubois J., Dehaene-Lambertz G., Kulikova S., Poupon C., Hüppi P. S., Hertz-Pannier L. The Early Development of Brain White Matter: A Review of Imaging Studies in Fetuses, Newborns and Infants. // *Neuroscience*. 2015. Vol. 276. P. 48-71.

### 2014

- Zheng T. W., O'Brien T. J., Kulikova Sofya P, Reid C. A., Morris M. J., Pinault D. Acute Effect of Carbamazepine on Corticothalamic 5 9-Hz and Thalamocortical Spindle (10-16-Hz) Oscillations in the Rat. // *European Journal of Neuroscience*. 2014. Vol. 39. No. 5. P. 788-799.
- Dubois J., Kulikova S., Hertz-Pannier L., Mangin J., Dehaene-Lambertz G., Poupon C. Correction Strategy for Diffusion-Weighted Images Corrupted with Motion: Application to the DTI Evaluation of Infants White Matter // *Magnetic Resonance Imaging*. 2014. Vol. 32. No. 8. P. 981-992.

### 2012

- Kulikova S., Tolmacheva E. A., Anderson P., Gaudias J., Adams B. E., Zheng T., Pinault D. Opposite effects of ketamine and deep brain stimulation on rat thalamocortical information processing. // *European Journal of Neuroscience*. 2012. Vol. 36. No. 10. P. 3407-3419.
- Kulikova S., Abatis M., Heng C., Lelievre V. Interkinetic Nuclear Migration: Reciprocal Activities of Dynein and Kinesin // *Cell Adhesion & Migration*. 2011. Vol. 5. No. 4. P. 277-279.

### 2011

- Kulikova S., Tolmacheva E., Gaudias J., Adams B., Zheng T. & Pinault D. Disruption of the thalamocortical signal-to-noise ratio in the pathogenesis of psychoses. // *Front. Comput. Neurosci. Conference Abstract: BC11: Computational Neuroscience & Neurotechnology Bernstein Conference & Neurex Annual Meeting*.
- Kulikova S., Tolmacheva E. A., Gaudias J., Adams B. E., Zheng T. & Pinault D. Disruption of the signal-to-noise ratio in the model for acute psychosis. // *Annals of the 54th science conference of MIPT (in Russian)*

### 2009

- Kulikova S. New approaches for increasing the precision of mental states recognition using Bayes Method when developing the brain-computer interface. // *Annals of the 52nd science conference of MIPT (in Russian)*

### 2008

- Kulikova S. Application of Common Spatial Pattern and Bayes methods for recognition of the mental states when developing the brain-computer interface. // *Annals of the 51st science conference of MIPT (in Russian)*

## Conferences and Workshops:

### 2016

- ESMRMB Congress (29 September – 1 October, Vienna, Austria). #304 DTI-TMS assessment of corticospinal tract and corpus callosum integrity in ischemic stroke patients with relation to their motor outcome at the chronic stage (oral presentation).
- XII International interdisciplinary congress “Neuroscience for medicine and psychology” (1-11 June, Sudak, Russia). Lecture: Modern noninvasive methods for investigating white matter using MRI.
- 25th European Stroke Conference (13 – 15 April, Venice, Italy). #473 DTI-TMS assessment of corticospinal tract integrity and unaffected hemisphere state in chronic ischemic stroke patients"

### 2015

- Active and passive methods of the brain mapping (29 October – 1 November, Moscow, Russia). <http://brainmappingschool.neurobiotech.ru/> Lecture: DTI: research and clinical applications
- OHBM Congress 2015 (14 – 18 June, Honolulu, USA). #3644 Toward a child white matter bundles atlas for developmental connectivity studies.
- ISMRM Congress (30 May - 5 June, Toronto, Canada). #2494 Creating a child brain connectivity atlas for reliable bundle identification in developmental studies.

### 2014

- Workshop NeWS 2014 (4-5 December, Gif-sur-Yvette, France). Creating an atlas of children brain connectivity (oral presentation). Multiparametric MRI to study brain development: Two novel promising approaches (poster presentation).
- ISMRM-ESMRMB 2014 Congress (10-16 May, Milan, Italy). #3147 A Novel Approach for Fast MWF Quantification; #1743 What New Do We Learn with Myelin Water Fraction in Infant White Matter Bundles in Comparison with Other MRI Parameters?
- 29/01/14-01/02/14, 24th Congress of the SFNP (Reims, France). #1072 La fraction d'eau liée à la myéline: un nouveau biomarqueur en imagerie de la myélinisation et de la démyélinisation?

### 2013

- ESMRMB Congress 2013 (3-5 Octobre, Toulouse, France). #476 Multi-parametric evaluation of the white matter maturation (oral presentation); #600 Comparison of quantitative MRI parameters in the developing white matter bundles (poster); #655 3T multimodal quantitative longitudinal MRI study in metachromatic leukodystrophy : preliminary study (poster).
- 23rd Congress of the SFNP (23-26 January, Nancy, France). Poster: Multimodal quantitative MRI at 3T in metachromatic leucodystrophy preliminary data.

### 2012

- Neurex Annual Meeting (25 October, Strasbourg/Illkirch, France). Poster: Opposite effects of ketamine on spontaneous and sensory-evoked  $\gamma$  oscillations in the thalamocortical system.

### 2011

- Computational Neuroscience & Neurotechnology Bernstein Conference & Neurex Annual Meeting (4-6 October, Freiburg, Germany). Poster: *Disruption of the thalamocortical signal-to-noise ratio in the pathogenesis of psychoses.*

### 2010

- 9th conference on cognitive neuropsychiatry (5-6 November, Strasbourg, France).
- The 7th FENS forum of European neuroscience (July, Amsterdam, Netherlands). Poster: Non-competitive NMDA<sub>A</sub> antagonist ketamine disrupts the state and function of the somatosensory thalamocortical system.

- Neurex Annual Meeting (14 June, Basel, Swiss).

## 2009

- 52nd science conference of MIPT (November, Russia). Report: *New approaches for increasing the precision of mental states recognition using Bayes Method when developing BCI.*
- Workshop “Biophysical models of neurons and interacting brain cells” (July, Pushino, Russia).
- Workshop “Biophysical approaches and methods” (22-24 April, Kiev, Ukraine).
- Student science conference “Technologies of the XXI century” (April, Moscow, Russia). 3<sup>rd</sup> prize for the review report on brain-computer interfaces.

## 2008

- 51st science conference of MIPT (November, Russia). First prize for the report: *Application of Common Spatial Pattern and Bayes methods for recognition of the mental states when developing the brain-computer interface.*

## Awards:

- 2016: Certificate of Appreciation from the Journal of Magnetic Resonance Imaging (Mark E. Schweitzer, Editor-In-Chief)
- 2016: FENS-DANA-BAW grant
- 2016: Winner of the “Simply about complexity” competition (Moscow State University)
- 2015: ISMRM student travel grant.
- 2014: ISMRM-ESMRMB student travel grant.
- 2013: ESMRMB student travel grant.
- 2009: scholarship of the Mayor of the city Dolgoprudnij for achievements in research and fundamental studies.
- 2006-2009: scholarship of the Charity Fond for Innovative Education in the Natural Science (Moscow, №1169).