April 2018, No. 10

The 10th Newsletter of the Institute of Medical Psychology and Behavioral Neurobiology

Presented to you by the Communication Committee

April 2018

A Reflection on the CommComm Periscope

The relative motion of human beings with respect to time and vice versa defines the moment one lives on this earth. Every year time goes through the same cycle and we human beings, whether we want or not, are in constant motion with respect to time. So, despite for many of us who have spent substantial amount of time at this successful and exciting institute, last year was better than any year before and we hope that the coming year will be even better than the last year. As always, we had many memorable events, many new publications, and many wonderful people have joined the institute. In this issue we will summarize all the events from year 2017, list our publications and welcome new colleagues and bid adieu to our colleagues moving further in their life.

Contents in a blink

Institute's Research Retreat

By Lea Himmer

Institute's Interna in few words

Last autumn we gathered in the beautiful Bad Teinach for three exciting days. The thrilling highlight of our Institute Retreat was, of course, the Institute Interna session, whose topics will be reviewed here in a few words for all those who unfortunately had to miss our retreat or were too hungover to follow the discussion.

Topic 1: PhD Student funding

While there is a tight financial situation at the institute, all PhD students were assured that they would be able to finish their degree provided they kept up their good work and were willing to apply for stipends if applicable.

Topic 2: Grant proposals

Things are progressing at a slow pace, however, multiple grant applications have been submitted by various people, and feedback should come soon. Money came to the institute in the form of intramural funding, stipends and grants submitted by Niels Bierbaumer.

Topic 3: Methods supervision

The search for "a new Hongi" started, however, he or she remained well hidden and is unknown to this day. More methods and programming workshops by PhD students within the institute were wished for, which unfortunately exceeds the time and resources PhD students have. Ander offered help in the form of regular meetings and a function collection for the institute.

Topic 4: Teaching Personnel

Because teaching is only a few people's favorite activity at this institute more external people will be hired exclusively for teaching. There's been a semi-official rule change allowing us to teach medical students in English now, so international people can contribute to teaching.

Topic 5: Organigram

We decided to build a new organigram for all people working at the institute to identify a) how many groups there are, and b) who is heading these groups.

And it all happened here

After having a blast and spending quality time, both scientifically and personally, our Christmas party last year took place in a galaxy .. far far away..

Christmas Party 2017

By wala' jaser

On the 8th of December on the earthly calender, the protagonists of both the two distant worlds of Star Trek and Star Wars sacrificed their ultra-important task of saving the cosmos and, riding with the speed of light, travelled to the Milky Way, Solar system, planet earth. Hurried, they parked their spaceships by Slicherstraße and came to join our party with the rest of the earthly creatures, having temporarily forgotten their differences and eternal combat.

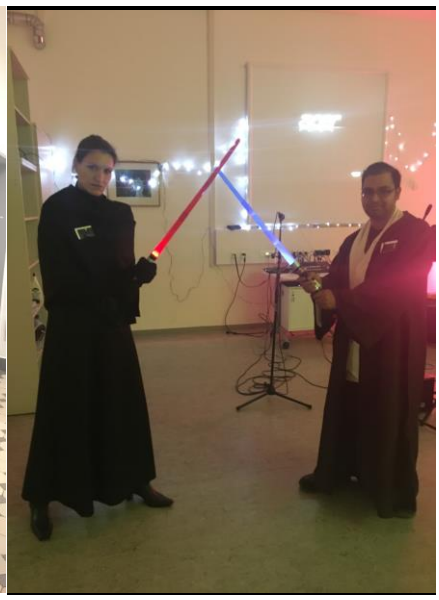
As you can imagine, we had to twist the geometry of Space-time to enable such event. But thanks to the brilliance of the neuroprosthetic team's engineers, computer scientists and spindle experts, it was a piece of cake!

Fighters of the light and the dark, with their light savers, The green little thing, and of course, one warrior from the Klingons (The most awesome tribe !)

Upon arrival, our visitors were welcome with a multi-person spaceship-control simulation constructed by our brilliant Start trek "Trill" engineer Florian Helmolt and a sticker which dictated their game group membership! A little before the start of the party, the contents of our food buffet was turned into star dust, it must have been the permanently hungry and blood thirsty Klingons !

C-3PO (Albrecht) lead our talented music band who kick-started the event with super Christmas music. The performance was so enjoyable that our galaxy visitors insisted that they kept going! I still went home, a long time after, with the bands "Last Christmas I gave you my heart" playing in my head..





Kaptin Spock (Andreas Ray) then gave an awesome introduction to our guests about the worlds of Star wars and Star Trek. The objectivity, and honest demonstration of both stories was shocking for anyone who had a glimpse about the heart-felt devotion and total dedication Andreas has for Star Trek! The presentation wetted our appetites for the evening and it was totally fun especially the commentary accompanying the video demonstrations.

The game "Create your own planet", where the participants were given different material to artistically create and decorate a polyester globe, brought to the fore a tremendous amount of competitive creativity which went beyond my initial expectation! Not only did the teams create beautiful "spring planets", "alternative-green-eco and multicultural planet" a "love planet" and a planet of "dark matter", the pseudoscientific, political and eco-geographical explanation of the different functions and architectural superiority of each of the planets was brilliant!

The spaceship hunt game prepared by the "start girl" appearing in episode 722 of star trek (Ainhoa) moved all the teams, in no time, the protagonists from two worlds were running all over the institute looking for clues to collect the pieces of their spaceships! The running did not stop there however, people were then running tucked to each

other in groups of 2, 3, and 4 in the narrow corridor with balloons between each pair of legs ! Here, the competition was at its best, people shed sweat and tears! For us, the viewers, it was “ein Herrliches Blick!”

Then.. the dance began alongside some conversation and a table Tennis competition! and the dance and the talks continued until the end of the night with the Spanish and South American dance team beautifully and powerfully rocking the dance floor !

At the end of the evening, the visitors of our Milky way had to walk on ice to ride again into their spaceships and fly away..

Thank you all for being awesome creatures !

Live Long and prosper!

News members and Colleagues Leaving

Our institute is a very dynamic place where new members always join and some of our colleagues move to new places to further their career. In the section “new members and members going to places” we highlight the quasi static nature of our institute by welcoming new members and biding adieu to members going to new places. In this edition of our newsletter we welcome four new members and bid adieu to three of our colleagues.

Shan Xia

Date joined: 6 October, 2017

Project Title: The role of sleep spindles and slow oscillations for sleep dependent memory consolidation and sleep related spine formation

LUN Yu, who will join in March 2018.
She will work (together with Jianfeng LIU) on the question how sleep regulates ingestive behavior and metabolic function; in particular, she will investigate whether sleep is associated with synaptic downscaling in (hypothalamic) structures that control metabolism.

Wissam Abou KHALEL, who has joined in January 2018.
He is working (together with Yvonne Ritze) on the question how metabolic plasticity is established, and how it is compromised in metabolic disorders like obesity; in particular, he is investigating the impact of saccharose intake on hormones that regulate body weight.

Kristian Adamatzky worked in Yvonne Ritze’s group on ‘The neuroendocrine plasticity of obesity’ from November 2016 until December 2017. Kristian successfully completed his laboratory rotation and wrote his Master Thesis on ‘Changes in neural activity and neuroendocrine markers induced by a high-sucrose diet in rats’.

Julia Carbone joined our lab in September 2017, working as a research assistant/intern in a joint project with Cecilia Forcato from Argentina. Julia will continue working with us as a PhD student, starting in April or May 2018, again in a joint project with Cecilia.

Graduation

We happily congratulate Dr. rer. nat. Sarah Alizadeh and Dr. rer. nat. Hamidreza Jamalabadi for their successful doctoral defense on the 29.09.2017. Thesis projects: Sarah: "Decoding Traces of Memory during Offline Continuous Electrical Brain Activity". Hamidreza: "Optimization of parameters and algorithms of multivariate pattern classification for the purpose of hypothesis testing in high-density EEG data". Both defended their thesis successfully on. Both joined me at LMU Munich in April 2013 and came to Tübingen in October 2014. Both work now as PostDocs with Prof. Martin Walter in the Neurology Department of UKT.

We also congratulate our dear colleague **Farid Shiman,** who successfully finished his PhD. Fraid has moved to Berlin to work at the Charite hospital.

Our Latest Publications

By Nadezhda Pavlova

In this section, we praise your productivity and scientific issued achievements. Like any journal, we can only publish what has been submitted to us, so this list – though extensive – might miss some great publications. Please help us to make this list as exhaustive as possible, by sending us an email to comm-mp@medizin.unituebingen.de straight away, when you have a new paper published. Let all of us proud of you!

- Alizadeh S., Jamalabadi H., Schönauer M., Leibold C., Gais S. (2017). Decoding cognitive concepts from neuroimaging data using multivariate pattern analysis. *NeuroImage*, *159*, 449–458.
- Antelis J.M., Montesano L., Ramos-Murguialday A., Birbaumer N., Minguez J. (2017). Decoding upper limb movement attempt from EEG measurements of the contralesional motor cortex in chronic stroke patients. *IEEE Transactions on Biomedical Engineering*, *64*(1), 99–111.
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- Besedovsky L., Ngo H.-V.V., Dimitrov S., Gassenmaier C., Lehmann R., Born J. (2017). Auditory closed-loop stimulation of EEG slow oscillations strengthens sleep and signs of its immune-supportive function. *Nature Communications*, *8*(1): 1984. Doi:10.1038/s41467-017-02170-3
- Bibian C., Lopez-Larraz E., Irastorza-Landa N., Birbaumer N., Ramos-Murguialday A. (2017, July). Evaluation of filtering techniques to extract movement intention information from low-frequency EEG activity. *In Engineering in Medicine and Biology Society (EMBC), 39th Annual International Conference of the IEEE* (pp. 2960–2963). IEEE.
- Borquez M., Contreras M.P., Vivaldi E., Born J., Inostroza M. (2017). Post-learning sleep transiently boosts context specific operant extinction memory. *Frontiers in Behavioral Neuroscience, 11*: 74. Doi:10.3389/fnbeh.2017.00074
- Brede S., Sputh A., Hartmann A.-C., Hallschmid M., Lehnert H., Klement J. (2017). Visual food cues decrease postprandial glucose concentrations in lean and obese men without affecting food intake and related endocrine parameters. *Appetite, 117*, 255–262.
- Cao L., Xia B., Maysam O., Li J., Xie H., Birbaumer N. (2017). A synchronous motor imagery based neural physiological paradigm for brain computer interface speller. *Frontiers in Human Neuroscience, 11*: 274. Doi:10.3389/fnhum.2017.00274
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- Friedrich M., Wilhelm I., Mölle M., Born J., Friederici A.D. (2017). The sleeping infant brain anticipates development. *Current Biology*, *27*(15), 2374–2380.e3.
- Gais S., Schönauer M. (2017). Untangling a cholinergic pathway from wakefulness to memory. *Neuron*, *94*(4), 696–698.

- Giel K., Zipfel S., Hallschmid M. (Epub 2017 Nov 28). Oxytocin and eating disorders: a narrative review on emerging findings and perspectives. *Current Neuropharmacology*. Doi:10.2174/1570159X15666171128143158
- Hanert A., Weber F.D., Pedersen A., Born J., Bartsch T. (2017). Sleep in humans stabilizes pattern separation performance. *The Journal of Neuroscience, 37*(50), 12238–12246.
- Herde L., Rossi V., Pourtois G., Rauss K. (Epub 2017 Jun 28). Early retinotopic responses to violations of emotion–location associations may depend on conscious awareness. *Cognitive Neuroscience*, 1–18. Doi:10.1080/17588928.2017.1338250
- Higgs S., Spetter M.S., Thomas J.M., Rotshtein P., Lee M., Hallschmid M., Dourish C.T. (2017). Interactions between metabolic, reward and cognitive processes in appetite control: Implications for novel weight management therapies. *Journal of Psychopharmacology, 31*(11), 1460–1474.
- Insausti-Delgado A., Lopez-Larraz E., Bibian C., Nishimura Y., Birbaumer N., Ramos-Murguialday A. (2017, July). Influence of trans-spinal magnetic stimulation in electrophysiological recordings for closed-loop rehabilitative systems. *In Engineering in Medicine and Biology Society (EMBC), 39th Annual International Conference of the IEEE* (pp. 2518–2521). IEEE.
- Irastorza-Landa N., Sarasola-Sanz A., Lopez-Larraz E., Bibian C., Shiman F., Birbaumer N., Ramos-Murguialday A. (2017, July). Design of continuous EMG classification approaches towards the control of a robotic exoskeleton in reaching movements. *15th International Conference on Rehabilitation Robotics (ICORR),* (pp. 128–133). IEEE.
- Kajal D.S., Braun C., Mellinger J., Sacchet M.D., Ruiz S., Fetz E., Birbaumer N., Sitaram R. (2017). Learned control of inter-hemispheric connectivity: Effects on bimanual motor performance: Learned Control of Inter-Hemispheric Connectivity. *Human Brain Mapping, 38*(9), 4353–4369.
- Kleber B., Friberg A., Zeitouni A., Zatorre R. (2017). Experience-dependent modulation of right anterior insula and sensorimotor regions as a function of noise-masked auditory feedback in singers and nonsingers. *NeuroImage, 147*, 97–110.
- Klinzing J.G., Kugler S., Soekadar S.R., Rasch B., Born J., Diekelmann S. (2018). Odor cueing during slow-wave sleep benefits memory independently of low cholinergic tone. *Psychopharmacology*, *235*(1), 291–299.
- Kotchoubey B. (2017). Evoked and event-related potentials in disorders of consciousness: A quantitative review. *Consciousness and Cognition, 54*, 155–167.
- Kotchoubey B., Pavlov Y.G. (2017). Name conditioning in event-related brain potentials. *Neurobiology of Learning and Memory*, *145*, 129–134.
- Kullmann S., Heni M., Veit R., Scheffler K., Machann J., Häring H.-U., Fritsche A., Preissl H. (2017). Intranasal insulin enhances brain functional connectivity mediating the relationship between adiposity and subjective feeling of hunger. *Scientific Reports, 7*(1): 1627. Doi:10.1038/s41598-017-01907-w
- Latchoumane C.-F.V., Ngo H.-V.V., Born J., Shin H.-S. (2017). Thalamic spindles promote memory formation during sleep through triple phase-locking of cortical, thalamic, and hippocampal rhythms. *Neuron, 95*(2), 424–435.e6.

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- Pereira S.I.R., Beijamini F., Weber F.D., Vincenzi R.A., da Silva F.A. C., Louzada F.M. (2017). Tactile stimulation during sleep alters slow oscillation and spindle densities but not motor skill. *Physiology & Behavior*, *169*, 59–68.
- Premoli I., Bergmann T.O., Fecchio M., Rosanova M., Biondi A., Belardinelli P., Ziemann U. (2017). The impact of GABAergic drugs on TMS-induced brain oscillations in human motor cortex. *NeuroImage*, *163*, 1–12.
- Ray A.M., Lopez-Larraz E., Figueiredo T.C., Birbaumer N., Ramos-Murguialday A. (2017, July). Movement-related brain oscillations vary with lesion location in severely paralyzed chronic stroke patients. *In Engineering in Medicine and Biology Society (EMBC), 39th Annual International Conference of the IEEE* (pp. 1664–1667). IEEE.
- Sarasola-Sanz A., Irastorza-Landa N., Lopez-Larraz E., Bibian C., Helmhold F., Broetz D., Birbaumer N., Ramos-Murguialday A. (2017, July). A hybrid brain-machine interface based on EEG and EMG activity for the motor rehabilitation of stroke patients. *15th International Conference on Rehabilitation Robotics (ICORR)*, (pp. 895–900). IEEE.
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- Seibold M., Rasch B., Born J., Diekelmann S. (2017). Reactivation of interference during sleep does not impair ongoing memory consolidation. *Memory*, 1–8. Doi:10.1080/09658211.2017.1329442
- Shiman F., Lopez-Larraz E., Sarasola-Sanz A., Irastorza-Landa N., Spüler M., Birbaumer N., Ramos-Murguialday A. (2017). Classification of different reaching movements from the same limb using EEG. *Journal of Neural Engineering*, *14*(4), 46018. Doi:10.1088/1741-2552/aa70d2
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brain stimulation by EEG/MEG to interact with ongoing brain activity and associated functions: A position paper. *Clinical Neurophysiology*, *128*(5), 843–857.

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- Wang J.-Y., Weber F.D., Zinke K., Inostroza M., Born J. (2017). More Effective Consolidation of Episodic Long-Term Memory in Children Than Adults-Unrelated to Sleep. *Child Development*. DOI:10.1111/cdev.12839
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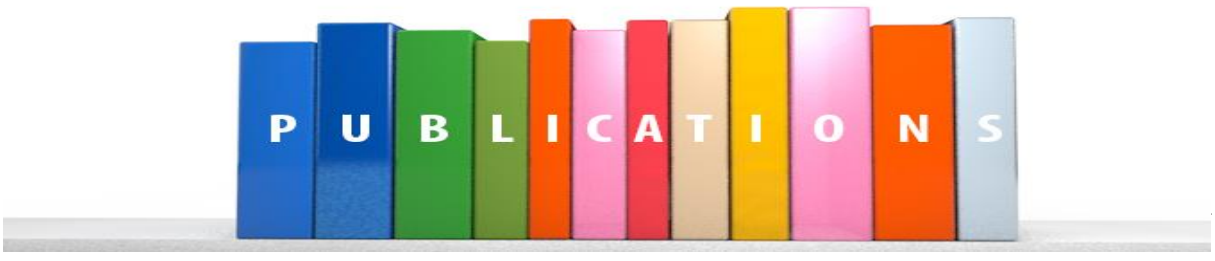
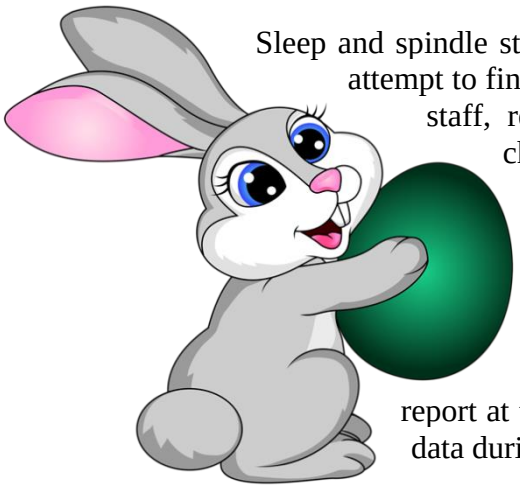
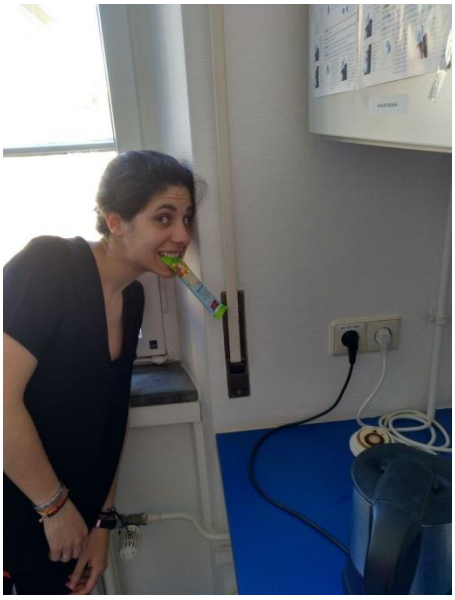
- Zamorano A.M., Cifre I., Montoya P., Riquelme I., Kleber B. (2017). Insula-based networks in professional musicians: Evidence for increased functional connectivity during resting state fMRI: Insula-Based Networks in Professional Musicians. *Human Brain Mapping*, *38*(10), 4834–4849.
- Zander T., Volz K.G., Born J., Diekelmann S. (2017). Sleep increases explicit solutions and reduces intuitive judgments of semantic coherence. *Learning & Memory*, *24*(12), 641–645.
- Zinke K., Noack H., Born J. (2018). Sleep augments training-induced improvement in working memory in children and adults. *Neurobiology of Learning and Memory*, *147*, 46–53.



Sweet surprise!



Sleep and spindle studies cannot just pass by and stay only in the Labs. In the attempt to find rational explanations to the changes in EEG patterns of the staff, registered remotely in last days of March, we decided to check the activity of the Institute on the holidays. The results were unexpected and breathtaking: in addition to some hard-working subjects happy Easter bunnies arrived to the CIN and Silchersrtraße buildings from our dreams and left chocolate presents for all of us. After that event mysterious changes were not registered in EEG of the personnel anymore. The research is being still in progress. Please, report at the next colloquium, if you have registered any inexplicable data during these days!



We hope you enjoyed our newsletter and our organized activities!

Keep your eyes open and get ready for our spring party which to be announced soon!