# fNIRS 2014

October 10-12

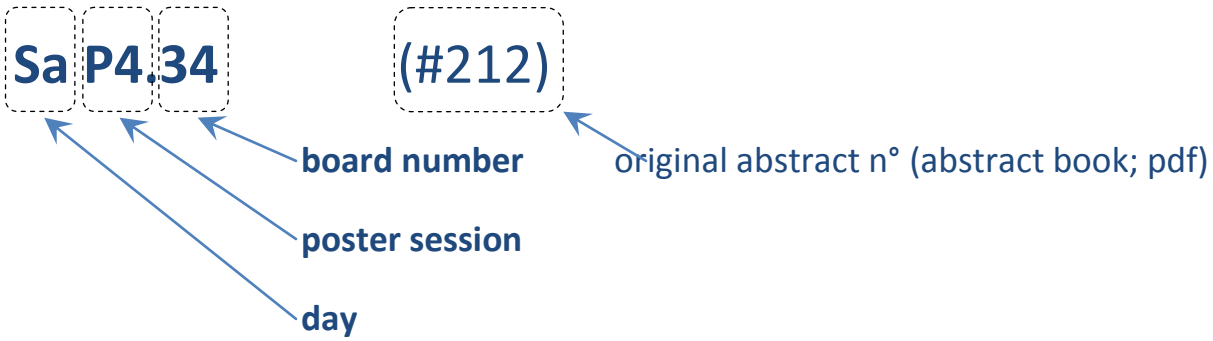
Montreal • Quebec • Canada

**POSTER SESSIONS**

**There are 6 poster sessions**

| | | |
|---|---|---|
| **Friday Morning** | **Fr P1** | P1 |
| **Friday Afternoon** | **Fr P2** | P2 |
| **Saturday Morning** | **Sa P3** | P3 |
| **Saturday Afternoon** | **Sa P4** | P4 |
| **Sunday Morning** | **Su P5** | P5 |
| **Sunday Afternoon** | **Su P6** | P6 |

**Note that the posters are coded as follows:**



# Poster Session I • (Fr P1)

## Friday Morning • Fr P1.01-55 *odd*

## Hardware

**Fr P1.01** (#184)

### Imaging Brain Function in Children with Autism Spectrum Disorder with Diffuse Optical Tomography

Adam T. Eggebrecht[1]*, John R. Pruett [2], John N. Constantino[2,3], Joseph P., Culver[1,4,5]

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*4 Department of Biomedical Engineering, Washington University School of Medicine, St. Louis, Missouri, 63130.*
*5 Department of Physics, Washington University School of Medicine, St. Louis, Missouri, 63130.*

**Fr P1.03** (#026)

### Long term Ambulatory Monitoring of Cerebral Hemodynamics, Systemic Hemodynamics, ECG and Acceleration: Technology Development and Pilot Applications

Quan Zhang*[1,2], Vladimir Ivkovic[1], Gang Hu[1], Gary E. Strangman[1,2]

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**Fr P1.05** (#199)

### Evolution of temporal synchrony between functional brain networks during state transitions

Adam Q. Bauer[1]*, Anne A. Bice[1], Ben J. Palanca [2], Joseph P. Culver[1,3,4]

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*3 Department of Biomedical Engineering, Washington University School of Medicine, Saint Louis, MO 63110*
*4 Department of Physics, Washington University School of Medicine, Saint Louis, MO 63110*

**Fr P1.07** (#091)

### Co-registering fNIRS and MRI in infants

S. Lloyd-Fox[1], J.E. Richards [2], A. Blasi[1], D.G.M. Murphy [3], C.E. Elwell [4], and M.H. Johnson[1]

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**Fr P1.09** (#219)

### A Silicon Integrated Sensor Interface for Portable FDNIRS

Chirag C. Sthalekar, Valencia Joyner Koomson

*Department of Electrical and Computer Engineering, Tufts University, Medford, MA 02155, USA*

## Multimodal

**Fr P1.11** (#136)

### Neurovascular coupling and Hemodynamic responses of the somatosensory and auditory rat cortex

M. Mahmoudzadeh[1], G. Dehaene-Lambertz [2], M. Fournier[1], G. Kongolo[1], S. Goudjil[1], R. Grebe[1], F. Wallois[1]

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2 3IFR49, Neurospin, 9119[1]Gif/Yvette, France

**Fr P1.13** (#034)

### Towards Affective Hybrid Brain-Computer Interfaces based on fNIRS, EEG and Peripheral Physiological Signals.

Andrea Clerico, Tiago H. Falk

*Institut National de la Recherche Scientifique (INRS-EMT), University of Quebec, Canada*

**Fr P1.15** (#138)

### Hemodynamic changes preceding interictal spike development in GABA disinhibition model of epilepsy in adult rat: electrocorticography and near-infrared spectroscopy study.

V. Osharina[1], A. Aarabi[1], M.Manoochehri [2], M. Mahmoudzadeh[1,2], F. Wallois[1,2]

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**Fr P1.17** (#170)

### Investigation of the neurovascular coupling from simultaneous fNIRS-EEG system using the triplet holder

Hasan Onur Keles[1], Randall L. Barbour [2], Haleh Aghajani[1], Ahmet Omurtag[1]

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*2 Department of Pathology, SUNY Downstate Medical Center, Brooklyn, NY, 11545*

**Fr P1.19** (#113)

### EEG-NIRS based assessment of neurovascular effects during anodal transcranial direct current stimulation - a stroke case study

Anirban Dutta[1], Shubhajit Roy Chowdhury [2], Abhijit Das [3]

*1 Charité - Universitätsmedizin Berlin, Germany & Institut national de recherche en informatique et en automatique (INRIA), Montpellier, France• 2 Centre for VLSI and Embedded Systems Technology, IIIT Hyderabad, India. • 3 Institute Of Neurosciences-Kolkata, India*

**Fr P1.21** (#092)

### Robust pre-clinical software system for real time monitoring of NIRS and EEG

Mahya Dehbozorgi, Philippe Pouliot, and Mohamad Sawan

*Department of Electrical Engineering, Ecole Polytechnique de Montreal, Montreal, QC, Canada*

## Analysis

**Fr P1.23** (#204)

### Modeling specific hemodynamic response function in fNIRS

Ke Peng[1], Dang Khoa Nguyen [2], Jérôme Le Lan[1], Olivier Dupuy[3,5], Amal Kassab[1], Sarah Fraser [4], Louis Bherer [3,4], Mohamad Sawan[1], Frédéric Lesage[1,6], Philippe Pouliot[1,6]

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**Fr P1.25** (#163)

### Biomarkers for Breast Cancer Detection in the Resting-State Dynamics of the Hemoglobin Signal

Harry L. Graber[1], Rabah M. Alabdi [3], Yong Xu [2], and Randall L. Barbour[1,2]

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**Fr P1.27** (#140)

### Thermal Impact of Functional Near Infrared Optical Brain Imaging

Mina Nourhashemi, Mahdi Mahmoudzadeh, Fabrice Wallois

*Inserm U 1105, GRAMFC, Université de Picardie, CHU Nord, Amiens, France*

**Fr P1.29** (#052)

### SPM toolbox to analyse and visualise fNIRS data (NIRSHSJ)

Julie Tremblay[1,2], Phetsamone Vannasing[1,2], Olivia Florea[1,2], Hubert Jacob Banville[1,3], Philippe Pouliot [3], Frédéric Lesage [3], Maryse Lassonde[1,2], Franco Lepore[1,2], Anne Gallagher[1,2]

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*2 CERNEC, Département de Psychologie, Université de Montréal*
*3 LIOM, Polytechnique, Université de Montréal*

**Fr P1.31** (#185)

### Optimizing factors to achieve high quality infant fNIRS time-course data

J.R.Goodwin[1,3],*, A.E.Cannaday[1],*, A.J.Berger[1,2],*

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*2 Department of Biomedical Engineering, University of Rochester, Rochester, NY 14627, USA*
*3 School of Chemistry, Physics & Mechanical Engineering, Queensland University of Technology, Brisbane, QLD, 4001, Australia*

**Fr P1.33** (#110)

### Evaluation of semi-subject-specific head model for fNIRS based on MR images of Japanese human head

Kotaro Nakamura[1], Kazuki Kurihara[1], Shunsuke Ichimura[1], Hiroshi Kawaguchi [2], Takayuki Obata[2], Hiroshi Ito[2] and Eiji Okada[1]

*1 Department of Electronics and Electrical Engineering, Keio University, • 2 National Institute of Radiological Sciences, Japan*

## Neurodevelopment

**Fr P1.35** (#074)

### Processing time-compressed speech in the newborn brain: the role of scale-invariant statistics

Cécile Issard[1,2] and Judit Gervain[1,2]

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*2 Laboratoire Psychologie de la Perception, Centre National de la Recherche Scientifique UMR 8242, Paris, France*

**Fr P1.37** (#159)

### Developmental and Condition-related Changes in the Prefrontal Cortex Activity during Rest

Ling-Yin Liang[1], Jia-Jin Jason Chen [2], Patricia A. Shewokis [3], Nancy Getchell[1,4]

*1 Biomechanics and Movement Science Program, University of Delaware, Newark, USA*
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*3 Nutrition Sciences Department, Drexel University, Philadelphia, USA*
*4 Kinesiology & Applied Physiology, University of Delaware, Newark, USA*

**Fr P1.39** (#046)

### The processing of faces across non-rigid facial transformation develops at 7 month of age: A fNIRS adaptation study

Megumi Kobayashi[1], Yumiko Otsuka [2], So Kanazawa [3], Masami K Yamaguchi [4], Ryusuke Kakigi [5]

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*2 School of Psychology, The University of New South Wales • 3 Department of Psychology, Japan Women's University •*
*4 Department of Psychology, Chuo University • 5 Department of Integr. Physiology, National Institute for Physiological Sciences*

**Fr P1.41** (#182)

### Developmental changes in executive functions during the first years of primary school - a longitudinal study using functional near-infrared spectroscopy

Karl-Heinz Untch[1,2], Caterina Gawrilow[1,3], Christian Fiebach[1,2]

*1 Center for Individual Development and Adaptive Education of Children at Risk (IDeA), 2 Department of Psychology, Goethe University, Frankfurt/Main, Germany; 3 Department of Psychology, Eberhard Karls University Tübingen, Germany*

**Fr P1.43** (#217)

### Using fNIRS and preferential looking to examine the early development of visual working memory

Lourdes Delgado Reyes, John P. Spencer

*DELTA Center and Department of Psychology, University of Iowa, Iowa City, U.S.A*

## Neurocognition

**Fr P1.45** (#191)

### fNIRS imaging of motor learning during upright stepping

TJ Huppert[1], P. Sparto [2], J. VanSwearingen [2]

*1 University of Pittsburgh, Dept of Radiology •2 University of Pittsburgh, Dept of Physical Therapy*

**Fr P1.47** (#047)

### The right encoding strategy: a near-infrared spectroscopy study on the lateralized activation for own and other race faces.

Susanna Timeo[1], Sabrina Brigadoi [2] and Teresa Farroni[1]

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*2 Biomedical Optics Research Laboratory, Department of Medical Physics and Bioengineering, University College London, U.K.*

P1

# Neonatal and Pediatrics

**Fr P1.49** (#078)

### Are babies born with left-hemisphere language dominance? An fNIRS study

Phetsamone Vannasing[1], Berta Gonzalez-Frankenberger[1,2,3], Natacha Paquette[1,2], Julie Tremblay[1], Olivia Florea[1,2], Dima Safi[1], Renée Béland[1], Franco Lepore[1,2], Anne Gallagher[1,2], and Maryse Lassonde[1]

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# Clinical

**Fr P1.51** (#072)

### Active vs. assisted vs. passive finger movements - a hemodynamic comparison of premotor and motor cortex activity

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*Pediatric Rehab Research Group, Rehabilitation Center for Children and Adolescents, Affoltern am Albis and Children's Research Center, University Children's Hospital, Zurich*

**Fr P1.53** (#067)

### The effect of obstructive sleep apnoea syndrome on the microvascular cerebral blood flow response to orthostatic stress

Igor Blanco[1], Peyman Zirak[1], Ana Fortuna [3,2], Gianluca Cotta [3], Mercedes Mayos [3,2], Anna Mola [3], Turgut Durduran[1]

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*3 Sleep Unit. Department of Respiratory Medicine, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain,*

**Fr P1.55** (#175)

### Bioadequate electromagnetic therapy efficiency estimation using tissue oximetry

L.P. Safonova[1], P.V.Luzhnov[1], L.A. Shamkina[1], V.M. Koshkin [2], D.A. Mashkov[1]

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*2 Pirogov Russian National Research Medical University, Russia*

# Poster Session II • (Fr P2)

## Friday Afternoon • Fr P2.02-54 *even*

## Hardware

**Fr P2.02** (#022)

**Time Resolved Whole-Head Diffuse Optical Tomography: How Fast Can We Go?**

Robert J Cooper[1]*, Samuel Powell [2], Simon R. Arridge [2] and Jeremy C. Hebden[1]

*1 Biomedical Optics Research Laboratory, Dept. of Medical Physics and Bioengineering, University College London, London UK*
*2 Department of Computer Science, University College London, London UK*

**Fr P2.04** (#122)

**Application of time-resolved near infrared spectroscopy in assessment of response to head-of-bed positioning in healthy subjects**

Michal Kacprzak[1]*, Piotr Sawosz[1], Anna Gerega[1], Wojciech Weigl[2,3], Adam Liebert[1]

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*2 Department of Intensive Care and Anesthesiology, Warsaw Praski Hospital, Poland*
*3 Department of Surgical Sciences/Anaesthesiology and Intensive Care, Uppsala University Hospital, Sweden*

**Fr P2.06** (#014)

**New algorithm for real-time scalp signal separation using multi-distance optodes**

Masashi Kiguchi and Tsukasa Funane

*Central Research Laboratory, Hitachi, Ltd., Hatoyama, Saitama 350-0395, Japan*

**Fr P2.08** (#186)

**NIRS Probe Construction Accuracy and Inter-subject Variability**

Christopher M. Aasted[1], Meryem A. Yücel [4], Mike P. Petkov[1], David Borsook[1,2,3], Lino Becerra[1,2,3], David Boas [4]

*Center for Pain and the Brain, Harvard Medical School,*
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*4 Department of Radiology, Athinoula Martinos Center for Bioengineering, Charlestown, MA*

P2

# Multimodal

**Fr P2.10** (#177)

Diffuse optical tomography using optimal optode montage dedicated to study epileptic discharges

Alexis Machado[1], Odile Marcotte [4], Giovanni Pellegrino[1], Jean-Marc Lina [3], Eliane Kobayashi [2], Christophe Grova[1,2]

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*3 École de Technologie Supérieure de l'Université du Québec, Québec, Canada*
*4 Université du Québec Montréal, Département d'informatique, Québec, Canada.*

**Fr P2.12** (#075)

**Cortical temporal response to surface lightness change**

Jan Mehnert[1,2,3,4], Hongfan Shen [2], Seong-Whan Lee [2], Huseyin Boyaci [5], Klaus-Robert Müller[1,2], Daniel Kersten [6,2]

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**Fr P2.14** ***withdrawn***

**Fr P2.16** (#016)

**Investigation of prefrontal NIRS signals during a working memory task by simultaneous NIRS-fMRI measurements**

Hiroki Sato[1],Noriaki Yahata [2], Tsukasa Funane[1], Ryu Takizawa [3], Takusige Katura[1], Hirokazu Atsumori[1], Yukika Nishimura [3], Akihide Kinoshita c, Masashi Kiguchi[1], Hideaki Koizumi[1], Masato Fukuda [4], and Kiyoto Kasai [3]

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*3 Department of Neuropsychiatry, Graduate School of Medicine, The University of Tokyo*
*4 Department of Psychiatry and Neuroscience, Gunma University*

**Fr P2.18** (#134)

**Functional Imaging of Preterms Neuronal and Hemodynamic Syllabic Responses by Using high density EEG and NIRS**

M. Mahmoudzadeh[1], G. Dehaene-Lambertz [2], M. Fournier[1], ,G. Kongolo[1], S. Goudjil[1], R. Grebe[1], F. Wallois[1]

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**Fr P2.20** (#112)

### A New Framework for fNIRS-EEG Fusion in Network Space

Zhen Yuan

*Bioimaging Core, Faculty of Health Sciences, University of Macau; Taipa, Macau SAR, China*

## Analysis

**Fr P2.22** (#146)

### FC-NIRS: A Functional Connectivity Analysis Tool for near-infrared spectroscopy data

Jingping Xu[1,2], Zhen Li[1,2], Xindi Wang[1,2], Yong He[1,2], Haijing Niu[1,2]

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*2 Center for Collaboration and Innovation in Brain and Learning Sciences, Beijing Normal University, Beijing, 100875 China*

**Fr P2.24** (#173)

### Examining the Effectiveness of Sliding-window Motion Artifact Rejection (SMAR) Algorithm in Detecting Head Motion Artifacts

Achala H. Rodrigo[1], Adrian Curtin [2], Anthony C. Ruocco[1], Hasan Ayaz [2]

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*2 School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, USA*

**Fr P2.26** (#156)

### Identification of biomarkers suitable for predicting cognitive decline in patients undergoing cardiac surgery

Douglas S. Pfeil[1], Harry L. Graber [2], Jeremy D. Coplan [3], Yong Xu [2], Randall L. Barbour[1,2], Daniel C. Lee [4]

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**Fr P2.28** (#106)

### Adaptability of MR head image using new pulse sequences for fast segmentation algorithms to construct subject-specific head models

Kazuki Kurihara[1], Hiroshi Kawaguchi [2], Takayuki Obata [2], Hiroshi Ito [2] and Eiji Okada[1]

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*2 National Institute of Radiological Sciences, Japan*

**Fr P2.30** (#050)

### Functional connectivity analysis in patients with dysfunction of the corpus callosum: A preliminary study

Masahiro Hirai[1], Naoki Kaneko [2], Takeshi Nakajima [2], Tsutomu Mizutani [2], Eiju Watanabe[1,2]

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*2 Department of Neurosurgery, Jichi Medical University, Tochigi, Japan*

**Fr P2.32** (#098)

### A comparison of procedures for co-registering scalp-recording locations to anatomical MRI images

Antonio M. Chiarelli [2], Edward L. Maclin [2], Kathy A. Low [2], Monica Fabiani[1,2] & Gabriele Gratton[1,2]

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*2 Beckman Institute, University of Illinois at Urbana Champaign*

**Fr P2.34** (#109)

### Evaluation of relationship between density of measurement points and point spread function of diffuse optical imaging

Yusuke Sakakibara, Kazuki Kurihara and Eiji Okada

*Department of Electronics and Electrical Engineering, Keio University, Japan*

## Neurodevelopment

**Fr P2.36** (#143)

### Brain Response to Reading Tasks and Reading Training in Dyslexia as Measured by fNIRS

Olga Chuntonov[1], Meltem Izzetoglu[1], Itamar Sela [2], Banu Onaral[1]

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*2 Haifa University, Haifa, Israel*

**Fr P2.38** (#154)

### Using fNIRS to study the effects of nutrition on cognitive development in infants: A pilot study on working memory in infants in rural Africa and UK

K. Begus[1], S. Lloyd-Fox[1], D. Halliday [2], H. Maris[1], M. Papademetriou [2], M. K. Darboe [3], A. M. Prentice[3,4], S. E. Moore[3,4] and C. E. Elwell [2]

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*3 MRC International Nutrition Group, Keneba Field Station, The Gambia*
*4 MRC International Nutrition Group, London School of Hygiene and Tropical Medicine, UK*

**Fr P2.40** (#107)

### The neural basis of speech and reading in developing readers: an fNIRS study

M.R. van den Bunt[1], M.A. Groen[1], L.T.W. Verhoeven[1]

Behavioural Science Institute, Radboud University Nijmegen, The Netherlands

**Fr P2.42** (#029)

### Prefrontal Cortex Hemodynamics and Age: A Pilot Study Using Functional Near Infrared Spectroscopy in Children

Afrouz A. Anderson[1], Victor Chernomordik[1], Fatima Chowdhry[1], Audrey Thurm [2], Elizabeth Smith [2], David Black [2], Dennis Matthews [3], Owen Rennert[1], Amir. H. Gandjbakhche[1]

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*2 National Institute of Mental Health, USA*
*3 Department of Neurological Surgery, School of Medicine, UC Davis, USA*

## Neurocognition

**Fr P2.44** (#035)

### Hemodynamic response in primary sensorimotor cortex to different mechanical stimulations of the lower back as measured by fNIRS

A. Vrana[1,2], M. Meier[1], K. Humphreys[1], J. Forster[1], S. Hotz-Boendermaker[1]

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*2 Department of Health Sciences and Technology, Human Movement Sciences, ETH Zurich, Zurich, Switzerland*

**Fr P2.46** (#194)

### Functional NIRS imaging during vestibular balance prosthesis

TJ Huppert[1], P. Sparto [2], P. Loughlin [3]

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*2 University of Pittsburgh, Dept of Physical Therapy*
*3 University of Pittsburgh, Dept of Biomedical Engineering*

**Fr P2.48** (#054)

### Test-Retest Reliability of fNIRS: Evidence from a Cognitive Working Memory Task

Amanda Kelly[1], Jodie Gawryluk[1] & Scott M. Hofer[1]

*1 Department of Psychology, University of Victoria*

P2

# Neonatal and Pediatrics

**Fr P2.50** (#123)

**Neonates hemodynamic responses to linguistic phonetic differences as a predictor of later language development**

Yasuyo Minagawa[1], Takeshi Arimitsu [2], Atsuko Matsuzaki [3], Tatsuhiko Yagihashi [4], Kazushige Ikeda [2], Takao Takahashi [2]

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*2 Department of Pediatrics, Keio University School of Medicine*
*3 Graduate School of Human Relations, Keio University*
*4 Department of Child Psychiatry, Komagino Hospital*

# Clinical

**Fr P2.52** (#209)

**Functional connectivity of the occipital region based on recurrence plot**

Masako Sugai, Masaharu Adachi

*Laboratory for Learning Systems, Tokyo Denki University, Tokyo, Japan*

**Fr P2.54** (#147)

**Human auditory and adjacent non-auditory cortical areas are hypermetabolic in tinnitus patients as measured by fNIRS.**

Silvia Bisconti[1], Mohamad Issa [2], Paul Kileny[1,2], Gregory Basura[1,2]

*1 Center for Human Growth and Development;*
*2 Department of Otolaryngology, Head and Neck Surgery; University of Michigan, Ann Arbor, MI 48109.*

# Other

**Fr P2.56** (#090)

**Temporal-spatial distribution of skin hemoglobin signals on the foreheard during a verbal fluency task**

Satoru Kohno, Yoshinobu Iguchi and Yoko Hoshi

*Integrated Neuroscience Research Project, Tokyo Metropolitan Institute of Medical Science, Tokyo, Japan*

# Poster Session III • (Sa P3)

## Saturday Morning • Sa P3.01-57 *odd*

## Hardware

**Sa P3.01** (#214)

**Development of NIRS system for translational studies of subcortical regions using implanted optical fibers**

Blaise deB. Frederick[1,3], Yunjie Tong[1,3], Susan Andersen[2,3]

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*2 Laboratory of Developmental Neuropharmacology, McLean Hospital, Belmont, MA 02478, USA*
*3 Department of Psychiatry, Harvard University Medical School, Boston, MA 02115, USA*

**Sa P3.03** (#013)

**A Novel Optical Signaling Method for fNIRS Measurements**

Chester Wildey

*Founder and CEO, MRRA Inc.*

**Sa P3.05** (#077)

**Towards fast optical signal detection through optical gating**

Karla J. Sánchez-Pérez[1], Miguel Ánge l González-Galicia[1], Misael Nava-Bautista[1], Javier Herrera-Vega[1], Luis Enrique Sucar[1], Felipe Orihuela-Espina[1], Carlos G. Treviño-Palacios[1]

*1 Instituto Nacional de Astrofísica, Óptica y Electrónica*

**Sa P3.07** (#089)

**A multi-channel fNIRS brain imager based on Arduino microcontroller**

Nima Hemmati Berivanlou, Seyed Kamaledin Setarehdan, Hossein Ahmadi Noubari

*Control and Intelligent Processing Center of Excellence, School of Electrical and Computer Engineering, College of Engineering, University of Tehran, Tehran, Iran*

# Multimodal

**Sa P3.09** (#137)

### Fast Optical Signal Changes in Penicillin-Induced Generalized Spikes in Animal Model

M. Manoochehri[1], M. Mahmoudzadeh[1], V. Osharina[1], F. Wallois[1]

*1 Inserm U 1105, GRAMFC, Université de Picardie, CHU Nord, Amiens, France*

**Sa P3.11** (#017)

### Autonomic correlates of prefrontal cortex activity during cognitive task

Paola Pinti, Daniela Cardone, Arcangelo Merla

*Infrared Imaging Lab, ITAB Institute for Advanced Biomedical Technologies, University G. d'Annunzio, Chieti, Italy*
*Department of Neurosciences, Imaging and Clinical Sciences, University G. d'Annunzio, Chieti-Pescara, Italy*

**Sa P3.13** (#128)

### A multimodal approach to calibrating age-related neurophysiology in a fNIRS study of the semantic words processing

M. Amiri[1,2], P. Pouliot[1,3], F. Lesage[1,3] and Y. Joanette [2,4,5]

*1 Polytechnique Montreal • 2 Institut universitaire de Gériatrie de Montréal • 3 Heart institute of Montreal*
*4 Faculty of Medicine, University of Montreal • 5 CIHR Institute of Aging, International Collaborative Research Strategy for Alzheimer's Disease*

**Sa P3.15** (#135)

### Neurovascular coupling in preterm neonates with Intra-Ventricular Hemorrhage: Combined high density EEG-NIRS study

M. Mahmoudzadeh[1], G. Dehaene-Lambertz [2], M. Fournier[1], G. Kongolo[1], S. Goudjil[1], R. Grebe[1], F. Wallois[1]

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*2 3IFR49, Neurospin, 91191 Gif/Yvette, France*

**Sa P3.17** (#021)

### Improving motor performance by personalizing non-invasive cortical stimulation with perturbation transcranial direct current stimulation (ptDCS)

Bilal Khan[1], Nathan Hervey[1], George Kondraske [3], Ann M. Stowe [2], Timea Hodics [2]*, and George Alexandrakis[1]*

*1 Department of Biomedical Engineering, University of Texas at Arlington, Arlington, TX*
*2 Department of Neurology and Neurotherapeutics, University of Texas Southwestern Medical Center, Dallas, TX*
*3 Human Performance Institute, University of Texas at Arlington, Arlington, TX*

**Sa P3.19** (#129): ***withdrawn***

# Analysis

**Sa P3.21** (#174)

### Evaluation of Functional Near Infrared Spectroscopy (fNIRS) for Assessment of the Visual and Motor Cortices in Adults

Brenna M. Giacherio[1] and Nasser H. Kashou[1]

*1 Wright State University, Dayton, OH, Biomedical, Industrial & Human Factors Engineering*

**Sa P3.23** (#161)

### nirsLAB: A Problem Solving Environment for fNIRS Neuroimaging Data Analysis

Yong Xu[1], Harry L. Graber[1], and Randall L. Barbour[1,2]

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*2 SUNY Downstate Medical Center, 450 Clarkson Avenue, Brooklyn, NY 11203, USA*

**Sa P3.25** (#151)

### Optimization of the general linear model for fNIRS with an adaptive hemodynamic response function

Minako Uga[1,2], Ippeita Dan[1,2], Toshifumi Sano[1,2], Haruka Dan[1,2], Eiju Watanabe[3]

*1 Appl. Cognitive Neuroscience Laboratory, Chuo University, 1-13-27 Kasuga, Bunkyo, Tokyo, • 2 Center for Development of Advanced Medical Technology, •3 Department of Neurosurgery, Jichi Medical University Yakushiji, Shimotsuke, Tochigi, Japan,*

**Sa P3.27** (#012)

### Supplementary use of fNIRS data in psycholinguistic research: A Japanese-English bilingual case study

Hideyuki Taura[1], Amanda Taura [2]

*1 Ritsumeikan University, Japan • 2 Setsunan University, Japan*

**Sa P3.29** (#195)

### Recording auditory cortex responses using NIRS

Pierre Jolicoeur[1,2,3,4], ƭtienne Bisaillon-Sicotte[1,2,3,4], Manon Maheux[1,2,3,4], Shirin Tabrizi [4,6], Jorge L. Armony[4,5,6]

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*4 International Laboratory for Brain, Music, and Sound Research (BRAMS) • 5 Douglas Mental Health University Institute and*

*Dept. of Psychiatry, McGill University McGill • 6 Department of Psychology, McGill University*

**Sa P3.31** (#100)

**Near-Infrared Spectroscopy of Image Clarity Perception in the Human Brain**

J. Eduardo Lugo, Claudine Habak, Rafael Doti, and Jocelyn Faubert

*Visual Psychophysics and Perception Laboratory, School of Optometry, University of Montreal, C.P. 6128 succ. Centre Ville, Montreal, Quebec, Canada*

**Sa P3.33** (#117)

**Analytical Characterization of the In0.53Ga0.47As n+nn+ Infrared photodetectors**

F. Z. Mahi[1], and L. Varani [2]

*1 Institute of Science and Technology, University of Bechar, Algeria*
*2 Institute of Electronics of the South (IES - CNRS UMR 5214), University of Montpellier, France*

# Neurodevelopment

**Sa P3.35** (#086)

**Syllable Processing in Infants: Uncovering the Temporal Organization of Perisylvian Brain Regions**

Kathy A. Low, Monica Fabiani, Daniel C. Hyde, Renee Baillargeon, Cynthia Fisher, and Gabriele Gratton

*University of Illinois, Urbana-Champaign*

**Sa P3.37** (#155)

**Cerebral Hemodynamics and Metabolism Responses to Somatosensory Stimulations in Premature Neonates by Near-infrared Spectroscopy**

Pei-Yi Lin[1], Katherine Hagan[1], Yvonne Sheldon [2], P. Ellen Grant [3], Maria Angela Franceschini[1]

*1 Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital / Harvard Medical School*
*2 Newborn Medicine, Brigham and Women's Hospital*
*3 Fetal-Neonatal Neuroimaging and Developmental Science Center, Boston Children's Hospital/ Harvard Medical School*

**Sa P3.39** (#039)

**Left-lateralized responses correlate with familiarization to novel phonotactic regularities in 12 months old infants**

Micol Vignotto[1,2], Maria Richter[1,2], Hellmuth Obrig[1,2], Sonja Rossi[1,2,3]

*1 University Hospital and Medical Faculty, University of Leipzig, Germany*
*2 Max Planck Institute for Human Cognitive and Brain Sciences Leipzig, Germany*
*3 Dept. of Medical Psychology, Medical University Innsbruck, Austria*

**Sa P3.41** (#033)

**Influence of early language experience on brain activation to language: A study of hearing infants with Deaf mothers**

Evelyne Mercure[1], Sarah Lloyd-Fox[2], Mark H Johnson[2], Mairéad MacSweeney[1]

*1 University College London*
*2 Birkbeck College, University of London*

## Neurocognition

**Sa P3.43** (#190)

**Inter-personal functional connectivity during interaction tasks**

TJ Huppert[1], JW. Barker[1], S. Perlman[2]

*1 University of Pittsburgh, Dept of Radiology*
*2 University of Pittsburgh, Dept of Psychiatry*

**Sa P3.45** (#025)

**Can you hear me? An fNIRS study on the auditory recovery after cochlear implantation**

S. Bisconti, M. Shulkin, G.J. Basura, P.R., Kileny, I. Kovelman,

*Center for Human Growth and Development, University of Michigan*

**Sa P3.47** (#059)

**Neural correlates of processing elastic moving faces: A functional near-infrared spectroscopy (fNIRS) study**

Naiqi G. Xiao[1], Qiandong Wang[2], Guowei Chen[2], Genyue Fu[2], & Kang Lee[1,2]

*1 University of Toronto*
*2 Zhejiang Normal University*

## Neonatal and Pediatrics

**Sa P3.49** (#171)

**Bedside functional connectivity mapping of the developing brain**

Silvina L. Ferradal[1,2], Steve M. Liao[3], Adam T. Eggebrecht[2], Joshua S. Shimony[4], Terrie E. Inder[5], Joseph P. Culver[1,2] and Christopher D. Smyser[3,4]

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*5 Department of Pediatric Newborn Medicine, Brigham and Women's Hospital, Boston, MA.*

# Clinical

**Sa P3.51** (#166)

**Coherent Hemodynamics Spectroscopy - Advances in Methodology and Clinical Applications**

Jana M. Kainerstorfer*, Angelo Sassaroli, Kristen T. Tgavalekos, and Sergio Fantini

*Department of Biomedical Engineering, Tufts University, 4 Colby Street, Medford, MA 02155, USA*

**Sa P3.53** (#043)

**Diuse optical characterization of the microvascular cerebral blood flow during obstructive sleep apnea events**

P. Zirak[1], I. Blanco[1], P. Bramon[1], C. Gregori[1], A. Fortuna [2], G. Cotta [2], M. Mayos [2], A. Mola [2], and Turgut Durduran[1]

*1 ICFO- The Institute of Photonic Sciences, Mediterranean Technology Park, 08860 Castelldefels (Barcelona)*
*2 Department of Pneumology, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain*

**Sa P3.55** (#168)

**Cortical mechanisms underlying sensorimotor enhancement induced by light haptic touch during locomotion**

Samir Sangani[1,2], Anouk Lamontagne[1,2], Joyce Fung[1,2]

*1 School of Physical and Occupational Therapy, McGill University, Montreal, Quebec*
*2 Feil/Oberfeld/CRIR Research Centre, Jewish Rehabilitation Hospital, Laval, Quebec*

# Other

**Sa P3.57** (#048)

**Combined EEG-fNIRS investigation of hierarchical rule learning in 5-months old infants**

Marina Winkler[1,2], Jutta L. Mueller[2,3], Angela D. Friederici [2], Stefan P. Koch[4,5], Claudia Männel [2]

*1 International Max Planck Research School on Neuroscience of Communication, Leipzig*
*2 Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig*
*3 Institute of Cognitive Science, Osnabrück*
*4 Charité Universitätsmedizin, Berlin*
*5 Berlin Neuroimaging Center (BNIC), Berlin*

# Poster Session IV • (Sa P4)

## Saturday Afternoon • Sa P4.02-56 *even*

## Hardware

**Sa P4.02** (#001)

**Analytical Characterization of the In0.53Ga0.47As n+nn+ Infrared Detectors**

F. Z. Mahi[1] and L. Varani [2]

*1 Institute of Science and Technology, University of Bechar, Algeria*
*2 Institute of Electronics of the South (IES - CNRS UMR 5214), University of Montpellier, France*

**Sa P4.04** (#032)

**Evaluation of Spatial Resolved Spectroscopy (SRS) for use in monitoring Traumatic Brain Injury (TBI) patients**

Michael Clancy[1], Anthony Belli [2], David Davies [2], Sam Lucas [3] and Hamid Dehghani[1]

*1 School of Computer Science*
*2 Clinical and Experimental Medicine*
*3 School of Sport, Exercise and Rehabilitation Science, University of Birmingham, United Kingdom*

**Sa P4.06** (#081)

**Investigation of time gated methods to control depth sensitivity in fNIRS time resolved data**

Luke Dunne[1], Sonny Gunadi[1], Terence S. Leung[1], Clare E. Elwell[1], Ilias Tachtsidis[1]

*1 Dept. Medical Physics & Bioengineering, UCL, London*

**Sa P4.08** (#126)

**Development of compact continuous wave NIRS instrument based on small size spectrometers for assessment of brain hemodynamics**

Anna Gerega[1], Daniel Milej[1], Wojciech Weigl [2], Michal Kacprzak[1], Adam Liebert[1]

*1 Nalecz Institute of Biocybernetics and Biomedical Engineering, Polish Academy of Sciences, Warsaw, Poland*
*2 Anaesthesiology and Intensive Care, Department of Surgical Sciences, Uppsala University, Sweden*

# Multimodal

**Sa P4.10** (#152)

**Hemodynamic response patterns during sleep- a concurrent time-domain fNIRS/EEG study in adults.**

Stefan P. Koch[1], Alexander Jelzow[2,3], Sophie K. Piper[1]*,Hellmuth Obrig [5], Renate Wehrle [6], Micahel Czisch [6], Heidrun Wabnitz[2], Jens Steinbrink[1,4]

*1 Charité, Department of Neurology, Berlin • 2 Physikalisch-Technische Bundesanstalt (PTB), Berlin, • 3 Becker & Hickl GmbH, Berlin • 4 Charité, Center for Stroke Research, Berlin • 5 MPI for Human Cognitive and Brain Sciences and University Hospital, Leipzig • 6 MPI Psychiatry Munich, Germany*

**Sa P4.12** (#037)

**The effect of colored light on human cerebral hemodynamics and oxygenation, end-tidal CO2 and skin conductance - A multimodal fNIRS study**

Felix Scholkmann[1,2], Sabine D. Klein[1], Martin Wolf [2] & Ursula Wolf[1]*

*1 Institute of Complementary Medicine IKOM, University of Bern • 2 Biomedical Optics Research Laboratory, Division of Neonatology, University Hospital Zurich, Switzerland*

**Sa P4.14** (#005)

**Validation of the hypercapnic calibrated fMRI method using DOT-fMRI fusion imaging.**

Meryem A. Yücel[1]*, Karleyton C. Evans [2], Juliette Selb[1], Theodore J. Huppert [3], David A. Boas[1] and Louis Gagnon[1]

*1 MGH/HST Athinoula A. Martinos Center for Biomedical Imaging, Department of Radiology, • 2 Department of Psychiatry, Massachusetts General Hospital, Harvard Medical School, Charlestown, 02129, MA, USA •3 Department of Radiology and Bioengineering, University of Pittsburgh, Pittsburgh, 15261, PA, USA*

**Sa P4.16** (#206)

**How does fNIRS compare with fMRI to study cognitive tasks?**

Mich•le Desjardins[1,3],*, Philippe Pouliot[1,2], Laurence Desjardins-Crépeau [3], Claudine J. Gauthier[3], Habib Benali [4], Rick D. Hoge [3], Louis Bherer [3], Frédéric Lesage[1,2]

*1 Institut de Génie Biomédical, École Polytechnique de Montréal • 2 Montreal Heart Institute • 3 Centre de recherche de l'Institut universitaire de gériatrie de Montréal • 4 Inserm, UPMC Univ. Paris 6, UMR S_678, Laboratoire d'Imagerie Fonctionnelle*

**Sa P4.18** (#042)

**Correspondence of EEG and NIRS sensitivity to the cerebral cortex using a high-density layout**

Paolo Giacometti, Solomon G. Diamond

*Thayer School of Engineering at Dartmouth, Hanover, New Hampshire, USA*

# Analysis

**Sa P4.20** (#061)

**Effective functional connectivity of own- and other-race face processing in children: A Granger Causality Analysis**

Guifei Zhou[1], Jiangang Liu[1], Xiao Pan Ding[2,3], Genyue Fu[3], Kang Lee[2,3]

*1 Beijing Jiaotong University • 2 University of Toronto • 3 Zhejiang Normal University*

**Sa P4.22** (#108)

**Analysis of time-resolved spatial sensitivity of NIRS using null source-detector separation**

Kohsuke Takai, Kazuki Kurihara and Eiji Okada

*Department of Electronics and Electrical Engineering, Keio University, Japan*

**Sa P4.24** (#056)

**Semi-virtual registration and virtual channel synthetization in fNIRS imaging**

Felipe Orihuela-Espina[1,2], Daniel R. Leff[1], Javier Herrera-Vega [2], Kunal Shetty[1], David R. C. James[1], Ara W. Darzi[1], Guang-Zhong Yang[1]

*1 Hamlyn Centre for Robotic Surgery, Imperial College London, United Kingdom • 2 National Institute for Astrophysics, Optics and Electronics (INAOE), Mexico*

**Sa P4.26** (#188)

**Understanding Signal-to-Noise ratio for image reconstruction in optical topography**

Javier Herrera-Vega[1], Felipe Orihuela-Espina[1], Karla Janeth Sanchez-Pérez[1], Luis Enrique Sucar[1], Carlos G. Trevi–o-Palacios[1]

*1 National Institute for Astrophysics, Optics and Electronics (INAOE), Mexico*

**Sa P4.28** (#197)

**Optimization of the NIRS technique as a way to measure latency differences in the onset of the haemodynamic response: A comparison of single-subject and jackknife approaches**

Manon Maheux[1,2,3,4], Étienne Bisaillon-Sicotte[1,2,3,4], Shirin Tabrizi [4,6], Jorge L. Armony[4,5,6], Jean-Marc Lina [7], Pierre Jolicoeur[1,2,3,4]

*1 Université de Montréal (UdeM) • 2 Centre de recherche en neuropsychologie et cognition (CERNEC) • 3 Centre de recherche de l'Institut universitaire de gériatrie de Montréal (CRIUGM) • 4 International Laboratory for Brain, Music, and Sound Research (BRAMS) • 5 Douglas Mental Health University Institute and Dept. of Psychiatry, McGill University McGill • 6 Department. of Psychology, McGill University • 7 Ecole de technologies superieures (ETS)*

**Sa P4.30** (#118)

**Total Variation Based Reconstruction for Diffuse Optical Tomography**

Xin Zhang

*National Laboratory of Pattern Recognition, Chinese Academy of Science*

**Sa P4.32** (#218)

**Quantification of head motion during infant near-infrared spectroscopy sessions for motion correction strategy selection**

Katherine L. Perdue[1, 2], Alissa Westerlund[1], Julia Cataldo[1], Charles A. Nelson[1,2]

*1 Labs of Cognitive Neuroscience, Division of Developmental Medicine, Boston Children's Hospital, Boston, MA, USA*
*2 Harvard Medical School, Boston, MA, USA*

# Neurodevelopment

**Sa P4.34** (#114)

**Distinct temporal properties of cortical hubs in the language network of infants**

Fumitaka Homae[1], Hama Watanabe [2], Gentaro Taga [2]

*1 Department of Language Sciences, Tokyo Metropolitan University • 2 Graduate School of Education, The University of Tokyo*

**Sa P4.36** (#088)

**fNIRS in Rural Gambia: Studies of Cognitive Function from Birth to 24 Months of Age**

D. W. R. Halliday[1], S. Lloyd-Fox [2], K. Begus [2], H. Maris [2], M. Papademetriou[1], N. Everdell[1], M. K. Darboe [3], A. M. Prentice[3,4], S. E. Moore[3,4], C. E. Elwell[1]

*1 Department of Medical Physics and Bioengineering, University College London, UK*
*2 Centre for Brain and Cognitive Development, Birkbeck, University of London, UK*
*3 MRC International Nutrition Group, Keneba Field Station, The Gambia*
*4 MRC International Nutrition Group, London School of Hygiene and Tropical Medicine, UK*

**Sa P4.38** (#149)

**Development of phase difference between cerebral oxy- and deoxy-hemoglobin fluctuations during the first half year of life**

Gentaro Taga[1], Fumitaka Homae [2], Hama Watanabe[1]

*1 Graduate School of Education, The University of Tokyo*
*2 Department of Language Sciences, Tokyo Metropolitan University*

**Sa P4.40** (#031)

### Brain activation to human vocalisations and environmental sounds in infancy and its association with later language development

Evelyne Mercure[1], Sarah Lloyd-Fox[2], Anna Blasi[2], Clare E Elwell[1], Mark H Johnson[2], The BASIS Team[3]

*1 University College London*
*2 Birkbeck College, University of London*
*3 The BASIS Team : Helena Ribeiro, Kim Davies, Helen Maris, Leslie Tucker*

**Sa P4.42** (#062)

### The Neural Development of Childrens' Spontaneous Deception: A Functional Near-infrared Spectoscopy (fNIRS) Study

Xiao Pan Ding[1,2], John E. Richards[3], Wanze Xie[3], Genyue Fu[2], Kang Lee[1,2]

*1 University of Toronto*
*2 Zhejiang Normal University*
*3 University of South Carolina*

## Neurocognition

**Sa P4.44** (#051)

### Frontal brain activation during emotional Stroop task in individuals at risk for schizophrenia and bipolar disorder

Aleksandra Aleksandrowicz[1,2], Florence Hagenmuller[1,2], Helene Haker Rössler[1,4], Karsten Heekeren[1,2], Anastasia Theodoridou[1,2], Susanne Walitza[1,3], Wulf Rössler[1,5], Wolfram Kawohl[1,2]

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*2 Department of Psychiatry, Psychotherapy and Psychosomatics, University Hospital of Psychiatry Zurich, Zurich, Switzerland*
*3 Department of Child and Adolescent Psychiatry, University of Zurich, Zurich, Switzerland*
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*5 Institute of Psychiatry, Laboratory of Neuroscience (LIM 27), University of Sao Paulo, Brazil*

**Sa P4.46** (#055)

### A Problem-Solving Task Specialized for Functional Neuroimaging: Validation of the Scarborough Adaptation of the Tower of London (S-TOL) Using Near-Infrared Spectroscopy

Anthony C. Ruocco[1], Achala H. Rodrigo[1], Jaeger Lam[1], Stefano I. Di Domenico[1], Bryanna Graves[1] and Hasan Ayaz[2]

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*2 School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA, USA*

**Sa P4.48** (#181)

**Speaker-listener persuasion: an fNIRS study of message propagation**

Kristin Shumaker, Matthew Brook O'Donnell, Nicolette Gregor, Lynda Lin and Emily B. Falk

*Communication Neuroscience Lab, University of Pennsylvania*

## Neonatal and Pediatrics

**Sa P4.50** (#019)

**A novel 4D neonatal head model for diffuse optical imaging of preterm to term newborns: where to find it and how to use it?**

Sabrina Brigadoi[1]* , Paul Aljabar [2], Maria Kuklisova-Murgasova [2], Simon R. Arridge [3], Robert J. Cooper[1]

*1 Biomedical Optics Research Laboratory, Department of Medical Physics and Bioengineering, University College London, U.K.*
*2 Centre for the Developing Brain & Dept. of Biomedical Engineering, Division of Imaging Sciences, King's College London, U.K.*
*3 Department of Computer Science, University College London, U.K.*

## Clinical

**Sa P4.52** (#076)

**Real-time mapping of optode-scalp optical coupling for optimized placement of fNIRS headgear**

Luca Pollonini[1]*, C. Olds [2], H. Abaya [2], H. Bortfeld [3], M.S. Beauchamp [4] and J. S. Oghalai [2]

*1 Abramson Center for the Future of Health and Department of Engineering Technology, University of Houston, TX*
*2 Department of Otolaryngology - Head and Neck Surgery, Stanford University, Stanford, CA • 3 Department of Psychology, University of Connecticut, Storrs, CT • 4 Department of Neurobiology and Anatomy, UT Health, Houston, TX*

**Sa P4.54** (#066)

**Usefulness of double density fNIRS (DD-fNIRS) for the diagnosis of neocortical epilepsy focus**

Hidenori Yokota[1], Keiji Ogruro[1], Takehiko Konno[1], Masahiro Hirai [2], Eiju Watanabe[1]

*1 Dept. of Neurosurgery*
*2 Center for Development of Advanced Medical Technology, Jichi Medical University, Tochigi, Japan*

**Sa P4.56** (#216)

**Epileptic seizure detection in fNIRS signals using a supervised classifier**

Edgar Guevara[1,2],*, Ke Peng[1], Dang Khoa Nguyen [3], Frédéric Lesage[1,2] and Philippe Pouliot[1,2]

*1 Department of Electrical Engineering, École Polytechnique de Montréal, Canada • 2 Montreal Heart Institute*
*3 Service de neurologie, Hôpital Notre-Dame du CHUM; Universidad de las Américas Puebla, Mexico*

# Poster Session V • (Su P5)

## Sunday Morning • Su P5.01-55 *odd*

## Analysis

**Su P5.01** (#215)

**Effective superficial layer thickness recovery using simultaneous multi-distance fitting of diffuse correlation spectroscopy data using a realistic Monte Carlo forward model**

Stefan A. Carp, David A. Boas, Juliette Selb

*Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA 02129, USA*

**Su P5.03** (#200)

**Analysis of breath hold and hypercapnia in vivo DCS data using a layered slab Monte Carlo model**

Juliette Selb, David A. Boas, Suk-Tak Chan, Karleyton C. Evans, and Stefan A. Carp

*Athinoula A. Martinos Center for Biomedical Imaging, Massachusetts General Hospital, Charlestown, MA 02129, USA*

**Su P5.05** (#148)

**Separation of superficial and cerebral hemodynamics based on time domain fNIRS and two-layer analysis**

Alexander Jelzow[1], Heidrun Wabnitz[1]*, Ilias Tachtsidis [2], Evgeniya Kirilina [3], Rüdiger Brühl [1], Rainer Macdonald [1]

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*3 Free University Berlin, Habelschwerdter Allee 45, 14195 Berlin, Germany*

**Su P5.07** (#127)

**A new linear regression method for fNIRS data mapping**

Viola Bonomini[1], Rebecca Re [2], Lucia Zucchelli [2], Francesca Ieva [3], Lorenzo Spinelli [4], Davide Contini [2], Anna Paganoni[1], Alessandro Torricelli [2]

*1 MOX - Department of Mathematics, Politecnico di Milano, Milan, Italy*
*2 Dipartimento di Fisica, Politecnico di Milano, Milan, Italy*
*3 Department of Mathematics Federigo Enriques , Universita degli Studi di Milano, Milan, Italy*
*4 Istituto di Fotonica e Nanotecnologie, CNR,Milan, Italy*

**Su P5.09** (#082)

**Benchmarking Algorithms for Image Reconstruction of Cerebral Diffuse Optical Tomography**

Christina Habermehl[1,2,3],*, Jens Steinbrink [2],4, Klaus-Robert Mueller[1,2,5,6] , and Stefan Haufe[1,2]

*1 Machine Learning Group, Department of Computer Science, Berlin Institute of Technology,*
*2 Bernstein Focus Neurotechnology, Berlin, Germany,*
*3 Charité University Medicine Berlin, Department of Neurology*
*4 Charité University Medicine Berlin, Center for Stroke Research Berlin,*
*5 Bernstein Center for Computational Neuroscience, Berlin, Germany,*
*6 Department of Brain and Cognitive Engineering, Korea University, Seoul*

**Su P5.11** (#085)

**Evaluating motion processing algorithms for use with fNIRS data from young children**

Kevin Bohache, Lourdes Delgado Reyes, Sobana Wijeakumar & John P. Spencer

*DELTA Center and Department of Psychology, University of Iowa, Iowa City, U.S.A*

**Su P5.13** (#162)

**Transient Artifact Reduction Algorithm (TARA) using Sparse Optimization and Filtering**

Ivan W. Selesnick[1], Harry L. Graber [2], Yin Ding[1], Tong Zhang[1], Randall L. Barbour [2]

*1 Dept. Electrical and Computer Engineering, New York University, Brooklyn, NY 11201, USA*
*2 NIRx Medical Technologies, Glen Head, NY 11545, USA*

## Neurodevelopment

**Su P5.15** (#093)

**Changes in motor cortex activity of infants - reaching and stepping patterns**

Ryota Nishiyori[1,2], Silvia Bisonti [2], and Bev Ulrich[1,2]

*1 School of Kinesiology, University of Michigan*
*2 Center for Human Growth and Development, University of Michigan*

**Su P5.17** (#009)

**Neural Responses to Affective Touch in Infants at Elevated Risk for ASD**

Harlan M. Fichtenholtz[1,2], Nicole M. McDonald [2], Laura C. Anderson [3], Jeffery A. Eilbott [2], Cara Keifer [2], Hannah Friedman [2], & Kevin A. Pelphrey [2]

*1 Psychiatry, Yale School of Medicine, West Haven, CT*
*2 Child Study Center, Yale University, New Haven, CT*
*3 University of Maryland, College Park, MD*

**Su P5.19** (#030)

### Developmental Changes in Visual Working Memory Revealed by Image-Based fNIRS Analyses

John P. Spencer[1], Sobanawartiny Wijeakumar[1], Lourdes Delgado Reyes[1], Kevin Bohache 1 & Vincent Magnotta [2]

*1 Delta Center and Department of Psychology, University of Iowa, Iowa City, U.S.A*
*2 Delta Center and Department of Radiology, University of Iowa, Iowa City, U.S.A*

**Su P5.21** (#071)

### What is that baby thinking? The development of an fNIRS measure of live parent-infant interaction

Nicole McDonald, Harlan Fichtenholtz, Cara Keifer, Hannah Friedman, Frederick Shic, and Kevin Pelphrey

*Yale School of Medicine, Child Study Center*

## Neurocognition

**Su P5.23** (#196)

### Temporal lobe responses to auditory expressions: An fNIRS study of music and voice processing

Shirin Tabrizi [4,6], Étienne Bisaillon-Sicotte[1,2,3,4], Manon Maheux[1,2,3,4], Pierre Jolicoeur[1,2,3,4], Jorge L. Armony[4,5,6]

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*6 Department. of Psychology, McGill University*

**Su P5.25** (#103)

### Language and Categorization in Monolingual and Bilingual Mandarin Speakers' Brains

Yanni Liu[1,2], Jie Chen[1], Daniel Kessler [2], Chao Liu[3,4], Niko Kaciroti[1,5], Ka I Ip[1,6], Twila Tardif[1,6]

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**Su P5.27** (#104)

### Auditory Processing in the Cerebellum: An Examination Using fNIRS

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**Su P5.29** (#045)

### Influence of Reading Habits on Brain Plasticity for Discourse Comprehension in Aging: NIRS contribution

Charles-Olivier Martin[1,2], Bernadette Ska[1,2]

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**Su P5.31** (#160)

### Prefrontal Activation during Tower of Hanoi in Healthy Participants.

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**Su P5.33** (#028)

### Using fNIRS to Characterize of Human Influential Factors: Towards Models of Quality of Experience Perception for Text-to-Speech Systems

Rishabh Gupta, Hubert J. Banville, Isabela Albuquerque and Tiago H. Falk

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## Neonatal and Pediatrics

**Su P5.35** (#015)

### fNIRS-based Evaluation of Cortical Plasticity in Children with Cerebral Palsy Undergoing Constraint-Induced Movement Therapy

Jianwei Cao[1], Bilal Khan[1], Nathan Hervey[1], Fenghua Tian[1], Hanli Liu[1], George Alexandrakis[1], Linsley Smith [2], Nancy J. Clegg [2], Mauricio R. Delgado [2], Laura Shagman [3] and Duncan L. MacFarlane [3]

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**Su P5.37** (#193)

**Accuracy of slab model recovery of StO2 and HbT values in neonates with frequency modulated (FM-) NIRS**

Jeffrey W. Barker and Theodore J. Huppert

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# Clinical

**Su P5.39** (#150)

**Cortical Contributions to Gait Control in Freely Moving Humans.**

Manuel König[1,2], Jan Mehnert[1,2], Christoph Schmitz[3,4], Jens Steinbrink [3], Hellmuth Obrig[1,2]

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*3 Charité University Medicine, Berlin, Germany;*
*4 NIRx Medizintechnik GmbH, Berlin, Germany*

**Su P5.41** (#139)

**Subthalamic nucleus high frequency stimulation reduces -almost immediately - primary sensorimotor and prefrontal dorsolateral cortical activity whatever the patient is at rest or performing a motor task: a fNIRS study**

M Lefranc[1,2], M Mahmoudzadeh [2], M Tir [3], P Krystowiak[3,4], F Wallois [2]

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**Su P5.43** (#120)

**Brain perfusion assessment by time-resolved monitoring of inflow and washout of ICG in patients with disorders of cerebral circulation**

Adam Liebert[1]*, Daniel Milej[1], Wojciech Weigl[2,3], Anna Gerega[1], Michal Kacprzak[1], Piotr Sawosz[1], Beata Toczylowska[1], Roman Maniewski[1]

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**Su P5.45** (#057)

### Diagnosis of focus side in intractable mesial temporal lobe epilepsy by fNIRS during spontaneous seizure

Keiji Oguro[1], Hidenori Yokota[1], Tsutomu Mizutani[1], Rizki Edmi Edison[1], Masahiro Hirai [2], Ippeita Dan [2], Eiju Watanabe[1]

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**Su P5.47** (#003)

### Persistent post-concussive symptoms are accompanied by decreased functional brain oxygenation

I Helmich[1], RS Saluja [2], H Lausberg[1], M Kempe[3,4], P Furley [4], A Berger[1], J-K Chen [2], A Ptito[3,5]

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**Su P5.49** (#220)

### Exploration of the Potential Clinical Applications of Near Infrared Spectroscopy (NIRS) in the Area of Pain Management

Kambiz Pourrezaei, Ahmad Pourshoghi. Zeinab Barati, Issa Zakeri , Daryl Omire-Mayor, Ardy Wong, Minakshi Mohanty, Kanghee Lee

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## Other

**Su P5.51** (#202)

### Assessing Cerebral Hemodynamics by Dynamic Contrast-Enhanced Near-Infrared Spectroscopy

K St. Lawrence[1,2], A Lee[1], K Verdecchia[1,2], JT Elliott [3], M Diop[1,2]

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**Su P5.53** (#049)

### Does Driver Age, Experience and Gender Affect Overtaking Behaviour and Prefrontal Cortex (PFC) Activity?

Hannah Foy[1], Peter Chapman[1] & Patrick Runham[1]

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**Su P5.55** (#131)

### Issues in Functional Near Infrared Spectroscopy

Christina Salnaitis

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P6

# Poster Session VI

## Sunday Afternoon • Su P6.02-54 *even*

## Analysis

**Su P6.02** (#179)

**Comparison of motion artifact correction algorithms for resting state NIRS**

Juliette Selb[1], Meryem Yücel[1], Dorte Phillip[2], Henrik W. Schytz[2], Helle K. Iversen[2], Messoud Ashina[2], David A. Boas[1]

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**Su P6.04** (#007)

**Targeted Principle Component Analysis: A new motion artifact correction approach for Near-Infrared Spectroscopy**

Meryem A. Yücel[1]*, Juliette Selb[1], Robert J. Cooper [2], David A. Boas[1]

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**Su P6.06** (#178)

**Removal of Motion Artifacts from Recorded NIRS Data During Walking**

Nadia Arfaoui[1],*, Philippe Pouliot[1,2], Jérôme Le Lan[1], Vanessa Simard [3], Elisabeth Charlebois-Cloutier [3], Sarah Fraser[3,4], Louis Bherer[3,5], Frédéric Lesage[1,2], and Mohamad Sawan[1]

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**Su P6.08** (#132)

**Non-linear Kalman filtering-based approach for physiological noise reduction in HRF estimation using SS-channel signals**

Pietro Dal Bianco[1], Sabrina Brigadoi[2,3]*, Simone Cutini [3], Robert J. Cooper [2], Juliette Selb [4], Giovanni Sparacino[1]

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**Su P6.10** (#157)

**Fractal structure of cerebral hemodynamics reflects structure of auditory input and motor output variability**

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**Su P6.12** (#164)

**Phenotype-Motivated Strategies for Optical Detection of Breast Cancer**

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## Neurodevelopment

**Su P6.14** (#069)

**Bilingualism alters children's prefrontal activation during a non-verbal attention task**

Maria M. Arredondo[1]*, Xiaosu Hu[1], Teresa Satterfield[1] & Ioulia Kovelman[1]

*1 University of Michigan*

**Su P6.16** (#192)

**fNIRS imaging of pediatric spatial working memory**

TJ Huppert[1], S. Perlman [2]

*1 University of Pittsburgh, Dept of Radiology*
*2 University of Pittsburgh, Dept of Psychiatry*

**Su P6.18** (#023)

**Shining light on neural dynamics of cognitive flexibility in early childhood.**

Aaron T. Buss[1], John P. Spencer [2]

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**Su P6.20** (#105)

**Functional Organization of Object Processing Areas in the Infant Brain**

Teresa Wilcox, Laura Hawkins, and Amy Hirshkowitz

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**Su P6.22** (#064)

**Age-dependence of emotional face processing in infants as measured with near-infrared spectoscopy**

Katherine L. Perdue[1,2], Alissa Westerlund[1], Miranda Ravicz[1], Charles A. Nelson[1,2]

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# Neurocognition

**Su P6.24** (#087)

**The strategy and motivational influences on the beneficial effect of neurostimulation: a tDCS and fNIRS study**

Filiz Gözenman, Kevin Jones & Marian E. Berryhill

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**Su P6.26** (#213)

**Cortical correlates of updating processes in working memory: a fNIRS investigation**

Guerrero, Mario Borragan, Daphne Peigneux

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**Su P6.28** (#002)

**Activation of the prefrontal cortex while performing a task at Preferred Slow Pace and Metronome Slow Pace: A functional near-infrared spectroscopy study**

Kaori Shimoda[1,2], Kenji Tsuchiya[1], Daichi Hara[1], Tatsuki Masuda[1], Kazuki Kitazawa[1], Shiori Katsuyama[1], Bumsuk Lee[1], Tsuneo Yamazaki[1], Takao Nakura [2], and Fusae Tozato[1]

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**Su P6.30** (#101)

**Using fNIRS to compare immersion vs. translation approaches for second language learning**

Ka I Ip[1,2], Silvia Bisconti [2], Jie Chen [2], Yanni Liu[2,3], Twila Tardif[1,2]

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**Su P6.32** (#189)

**fNIRS study of numerical cognition in adults**

Ellis, A., Ip, K., Hsu, L., Armstrong, M., Smith, C., Davis-Kean, P., & Kovelman, I.

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**Su P6.34** (#121)

**Assessing emotions through Near Infrared Spectroscopy**

Jose Leon-Carrion

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## Neonatal and Pediatrics

**Su P6.36** (#142)

**Pre-operative cerebral hemodynamics from birth until surgery in infants with critical congenital heart disease**

Jennifer M. Lynch[1], Madeline Winters [2], David R. Busch[1,2], Tiffany Ko [3], Ann L. McCarthy [2], Rui Xiao [4], Susan C. Nicolson[5], Lisa M. Montenegro[5], Stephanie Fuller[6], J. William Gaynor[6], Thomas L. Spray[6], Arjun G. Yodh[1], Daniel J. Licht [2], Maryam Y. Naim[7]

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**Su P6.38** (#201)

**Clinical Evidence of Ventricular Contamination in a NIRS Study of Post-Hemorrhagic Hydrocephalus in Preterm Infants**

J Kishimoto[1,2], M Diop[1,2], P McLachlan[1,2], S de Ribaupierre[1,3], DS Lee [4], K St Lawrence[1,2]

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*3 Department of Clinical Neurological Sciences, Western University*
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# Clinical

**Su P6.40** (#041)

**Hemodynamic changes in cortical sensorimotor systems following hand and orofacial motor tasks and pulsed cutaneous stimulation.**

A. Oder[1,2], R. Custead[1,2], H. Oh[1,2,3], S.M. Barlow[1,2,3]

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**Su P6.42** (#176)

**Investigation of Hemodynamic Changes during General Anesthesia via Functional Near Infrared Spectroscopy**

Gabriela Hernandez Meza[1], Kurtulus Izzetoglu[1], Meltem Izzetoglu[1], Mary Osbakken[1,2], Michael Green[3,4], Ashish Sihna[3,4], Banu Onaral[1]

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*2 Osbakken Consulting,*
*3 College of Medicine, Drexel University,*
*4 Dept. of Anesthesiology, Drexel University.*

**Su P6.44** (#027)

**Semiautomatic application for task-related component analysis (TRCA) to extract task-related signal changes from fNIRS signal: Clinical applications.**

Eiju Watanabe[1], Takushige Katsura [2], Hiroki Sato [2], Tsutomu Mizutani [3], Ippeita Dan [3]

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**Su P6.46** (#165)

**Pre-surgical investigation of reading epilepsy using multimodal neuroimaging**

Dima Safi *[1,2], Dang K. Nguyen [3], Renée Béland [4], Phetsamone Vannasing [2], Julie Tremblay [2], Ismail Mohammed [5], Philippe Pouliot [6], Maryse Lassonde[1,2], Anne Gallagher[1,2]

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*6 E'cole Polytechnique, Université de Montréal, Montréal, QC, Canada*

**Su P6.48** (#044)

**Novel application of Support Vector Machines to classify hemodynamic response obtained by multi-channel NIRS measurement**

Hiroko Ichikawa[1,2], Jun Kitazono[3,4], Kenji Nagata [3], Akira Manda [3], Keiichi Shimamura[4,5], Ryoichi Sakuta[4,5], Masato Okada [3,6], Masami K. Yamaguchi[1], So Kanazawa [7], and Ryusuke Kakigi [8]

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**Su P6.50** (#095)

**Cortical Activation During Swallowing, Cortical Suppression During Vibrotactile Stimulation Alone**

Rachel Mulheren, Christy Ludlow

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# Other

**Su P6.52** (#038)

**Reduced haemodynamic response in the ageing visual cortex**

Laura Ward, Ross Aitchison, Melisa Tawse, Ana de Freitas, Anita Simmers and Uma Shahani

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**Su P6.54** (#133)

**The development of functional Near-infrared Cortical Imaging (fNCI): the direct cortical hemodynamic mapping of the miniature pig's somatosensory area.**

Minako Uga[1,4]*, Toshiyuki Saito [3], Hidenori Yokota [2], Keiji Oguro [2], Edmi Edison Rizki [2], Tsutomu Mizutani[1,4], Ippeita Dan [1,4], and Eiju Watanabe [1,2]

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