

FRIDAY 18TH AUGUST

- 09:00 – 12:00 **Directors' committee meeting**
- 10:30 – Registration desk open
- 12:00 – 13:45 **Directors' lunch**
- 13:30 – 13:45 **Opening of Symposium**

PHYSIOLOGY OF COLOUR VISION

- 14:00 – 14:15 **Responses of macaque ganglion cells to natural scenes: spatial, temporal and chromatic factors**
Barry Lee, Manuel Schottdorf
- 14:15 – 14:30 **Are retinal pathways the source of contrast-dependent red-green balance shift?**
Steven L Buck, Tanner DeLawyer, Fred Rieke
- 14:30 – 14:45 **Melanopsin contributions to image forming vision in humans**
Andrew J Zele, Prakash Adhikari, Beatrix Feigl, Dingcai Cao
- 14:45 – 15:00 **Paradoxical pupil constriction to isolated M-cone increments**
Ian J Murray, Jan Kremers, Declan McKeefry, Neil RA Parry
- 15:00 – 15:15 **Spatial distribution of S-cones characterized in human and macaque retinae**
Ravi S Jonnal, Glen Jeffery, Tobias W Weinrich, John S Werner
- 15:15 – 15:30 **Melanopsin contributions to human brightness estimation**
Beatrix Feigl, Prakash Adhikari, Andrew J Zele, Dingcai Cao
- 15:30 – 16:00 **Coffee break**

COLOUR INDUCTION AND CONSTANCY I

- 16:00 – 16:15 **Chicken colour vision in context: colour constancy and colour contrast**
Almut Kelber, Peter Olsson, Olle Lind
- 16:15 – 16:30 **Partial independence of brown induction suggests brightness induction is a two-stage process**
Joris Vincent, Hohjin Im, Steven L Buck
- 16:30 – 16:45 **Modeling individual differences in appearance matches made with simple achromatic contrast displays.**
Michael E Rudd
- 16:45 – 17:00 **Does local chromatic contrast discrimination predict global illumination discrimination ability?**
Anya Hurlbert, Stacey Aston, Olivia Kingston
- 17:00 – 17:15 **Illuminant estimation by the optimal color hypothesis for natural objects and daylights**
Keiji Uchikawa, Kazuho Fukuda
- 17:15 – 17:30 **Short break**

INVITED TALK 1

- 17:30 – 18:30 **Reverse-engineering circuits that subserve human spatial and color vision**
Austin Roorda
- 19:00 – 21:00 **Welcome reception**

SATURDAY 19TH AUGUST

- 08:30 – Registration desk open

VARIABILITY IN COLOUR VISION

- 09:00 – 09:15 **Individual differences in hue scaling suggest mechanisms narrowly tuned for hue and broadly tuned for lightness**
Kara J Emery, Vicki J Volbrecht, David H Peterzell, Michael A Webster
- 09:15 – 09:30 **Detection of cone isolating chromatic spots is limited by cone number**
Rigmor C Baraas, Hilde R Pedersen, Lene A Hagen, Stuart J Gilson
- 09:30 – 09:45 **Estimates of L:M cone ratio for Norwegian males and females ..**
Lene A Hagen, James A Kuchenbecker, Stuart J Gilson, Maureen Neitz, Jay Neitz, Rigmor C Baraas
- 09:45 – 10:00 **Development of chromatic and achromatic thresholds in children 5-12 years of age: Evidence for higher blue-yellow thresholds in early childhood**
Stephen J Dain, Barbara Y Ling
- 10:00 – 10:15 **Chromatic adaptation limits in colour discrimination**
Balázs V Nagy, Matheus T Horn, Dora F Ventura
- 10:15 – 10:30 **Anomalous trichromatic colour vision model for evaluation of PIC plates**
Sergejs Fomins, Maris Ozolinsh, Renārs Trukša, Līva Strade, Gunta Krūmiņa
- 10:30 – 11:00 **Coffee break**

CONGENITAL COLOUR VISION DEFECTS

- 11:00 – 11:15 **Color compensation in anomalous trichromats assessed with fMRI**
Katherine EM Tregillus, John E Vanston, Donald IA MacLeod, Ichiro Kuriki, Stephen A Engel, Michael A Webster
- 11:15 – 11:30 **A color difference data set for observers with color vision deficiency**
Anne Kristin Kvitle, Phil Green, Peter Nussbaum
- 11:30 – 11:45 **Glasses for the colorblind: Their effect on chromatic discrimination in subjects with congenital red-green color vision deficiency**
Emily J Patterson
- 11:45 – 12:00 **Cone-isolating ERGs and VEPs in genetically characterized dichromats**
Mirella TS Barboni, Balázs V Nagy, Cristiane MG Martins, Daniela MO Bonci, Einat Hanzman, Avinash Aher, Tina I Tsai, Jan Kremers, Dora F Ventura
- 12:00 – 13:30 **Lunch**

INVITED TALK 2

13:30 – 14:30 **Colour selectivity in the human visual system measured with fMRI adaptation – from thalamus to cortex**
Kathy T Mullen

14:30 – 16:30 **Poster session 1** (incl. coffee break)

CLINICAL ASPECTS OF COLOUR VISION

16:30 – 16:45 **Effects of yellow IOLs on peripheral mesopic vision under different spectral power distributions**
Eduardo G Vicente, Lioba P Obregon, Isabel Arranz, Beatriz M Matesanz, José A Menéndez, David Galarreta, Santiago Mar, Juan A Aparicio

16:45 – 17:00 **Color Vision Changes in Alzheimer's Disease**
Kallene SM Vidal, Mirella TS Barboni, Balázs V Nagy, Cristiane MG Martins, Matheus T Horn, Geraldo B Filho, Dora F Ventura

17:00 – 17:15 **Chromatic VEP responses and OCT characteristics in young patients with demyelinating disease**
Manca Tekavcic-Pompe, Branka S Kranjc, Darko Perovšek, Maja Sustar

17:15 – 17:30 **Temporal contrast sensitivity functions driven by different photoreceptor subtypes in patients with retinitis pigmentosa and Stargardt's disease**
Cord Huchzermeyer, Jan Kremers, Francesca Pasutto

VERRIEST MEDAL LECTURE

17:30 – 18:30 **Colour vision in an uncertain natural world** David H Foster

SUNDAY 20TH AUGUST

08:30 – Registration desk open

COLOUR INDUCTION AND CONSTANCY II

09:00 – 09:15 **Separate spatial channels for color vision**
Arthur G Shapiro, Laysa Hedjar

09:15 – 09:30 **Metamers in real world scenarios**
Arash Akbarinia, Karl R Gegenfurtner

09:30 – 09:45 **Hyper color contrast illusion (HCC), large enhancement of simultaneous color contrast by bordering white line**
Tama Kanematsu, Kowa Koida

09:45 – 10:00 **Investigations into the effect of different spectra upon the process of chromatic adaptation**
Daniel Garside, Lindsay MacDonald

10:00 – 10:15 **Colour discrimination under different states of chromatic adaptation**
Ágnes Urbin, Balázs V Nagy, Klára Wenzel

10:15 – 10:30 **Chromatic induction in space and time**
Andrew J Coia, Steven K Shevell

10:30 – 11:00 **Coffee break**

COLOUR VISION ASSESSMENT

11:00 – 11:15 **Chromatic sensitivity in Dyslexia**

Galina V Paramei, Joseph Black, Lorna Bourke, John L Barbur

11:15 – 11:30 **Operational based vision assessment: Cone contrast test research and development**

Marc Winterbottom, James Gaska, Steve Wright, Steven C Hadley

11:30 – 11:45 **On the ability of colour fidelity metrics to predict perceived colour difference**

Sophie Jost, Coralie Cauwerts, Hareesh Mandalapu

11:45 – 12:00 **Age-related changes in chromatic and achromatic contrast sensitivity in young people, as assessed using a tablet computer-based test**

Mei Ying Boon, Lakshmi Bodduluri, Stephen J Dain

12:00 – 13:30 **Lunch**

13:30 – 15:30 **Poster session 2** (incl. coffee break)

INVITED TALK 3

15:30 – 16:30 **Cortical double-opponent cells and the importance of color edges**

Robert M Shapley

16:30 – 16:45 **Short break**

CENTRAL PROCESSING OF COLOUR VISION

16:45 – 17:00 **Hue opponency: chromatic valence functions, individual differences, cortical modeling and the transform from spikes to sensitivity**

Vincent A Billock

17:00 – 17:15 **Color-ambiguity Matching**

Steven K Shevell, Wei Wang

17:15 – 17:30 **Interactions of colour- and luminance-defined motion signals in human visual cortex measured by fMRI**

Ichiro Kuriki, Weijing Ren, Kazumichi Matsumiya, Satoshi Shioiri

17:30 – 17:45 **Weak colour information reduces the precision of luminance perception**

Ippeei Negishi, Keizo Shinomori

17:45 – 18:00 **A tetrachromatic sensor system suited for measuring the colour of rainbows and flowers**

Thomas Bangert, Ebroul Izquierdo

18:00 – 18:15 **Discrimination of spatially separate stimuli: the case of saturation**

Marina Danilova, John D Mollon

18:30 – 19:30 **“Eine Uni – Ein Buch” – FAU book club** (informal)

MONDAY 21ST AUGUST

08:30 – Registration desk open

OBJECT-SURFACE PROPERTIES AND MATERIAL PERCEPTION

- 09:00 – 09:15 **Natural colours and aesthetic preference**
Sérgio MC Nascimento, Anke Marit Albers, Karl R Gegenfurtner
- 09:15 – 09:30 **Does motion of glossy objects promote separation of lighting and surface colour?**
Hannah E Smithson, Robert J Lee
- 09:30 – 09:45 **Automatic shadow detection using hyperspectral data for terrain classification**
Christian Winkens, Veronica Adams, Dietrich Paulus
- 09:45 – 10:00 **Influence of Melanopsin excitation on brightness perception and pupil size**
Mohd AA Raza, Sophie Jost, Matthieu Iodice
- 10:00 – 10:30 **Coffee break**

COLOUR COGNITION

- 10:30 – 10:45 **Semantic word impressions expressed by hue**
Keizo Shinomori, Honami Komatsu
- 10:45 – 11:00 **The attentional filters for hue and for saturation**
Sarah J Flaherty, Marina V Danilova, John D Mollon
- 11:00 – 11:15 **Color language reflects color use**
Bevil Conway, Edward Gibson, Richard Futrell, Julian Jara-Ettinger, Kyle Mahowald, Leon Bergen, Siva Ratnasigam, Mitchell Gibson, Steven Piantadosi
- 11:15 – 11:30 **#thedress: the first multi-stable color image**
Rosa Lafer-Sousa, Bevil Conway
- 11:30 – 12:00 General discussion regarding excursion and banquet
- 12:00 – 12:30 **Group photo**
- 12:30 – 18:30 **Lunch and Excursion**
- 19:00 – 21:30 **Banquet**

TUESDAY 22ND AUGUST

08:30 – Registration desk open

UNIQUE HUES

- 09:00 – 09:15 **The Impact of Melanopsin Activation on Unique White Perception**

- Dingcai Cao, Adam Chang, Shaoyan Gai
- 09:15 – 09:30 **Unique hues are not mediated by two perceptually opponent mechanisms**
Sophie Wuerger
- 09:30 – 09:45 **Typical and unique hues depend on saturation**
Christoph Witzel, Juliana Hammermeister
- 09:45 – 10:00 **Psychological elementary colours in visual search task**
Katsuaki Sakata
- 10:00 – 10:30 **Coffee break**

NATURAL SCENES AND ART

- 10:30 – 10:45 **Constancy of skin colour reproduction in art paintings**
Kinjiro Amano, Sérgio MC Nascimento
- 10:45 – 11:00 **Luminance and lightness distribution in natural scenes and art paintings**
João MM Linhares, Cristina Montagner, Andrea Casini, Costanza Cucci, Lorenzo Stefani, Marcello Picollo, Taisei Kondo, Shigeki Nakauchi, Sérgio MC Nascimento
- 11:00 – 11:15 **Blindness to absence of color in natural scene images**
Eiji Kimura, Natsumi Takahashi
- 11:15 – 11:30 **Colour in paintings – an independent contribution to beauty?**
Anke Marit Albers, Sérgio MC Nascimento, Karl R Gegenfurtner
- 11:30 – 13:00 **Business meeting**
- 13:00 – 13:30 **Closing of Symposium**

SATURDAY 19TH AND SUNDAY 20TH AUGUST

POSTERS

- 1 **Off-axis Mesopic Contrast Sensitivity. The contribution of rods and cones from the interactions among SPD, luminance level and spatial frequency**
Barbara Silva, Maria C Tripolone, Luis Issolio, Elisa Colombo
- 2 **Relation between increase in chromaticity threshold and eye optical quality in aging**
Marcelo F Costa, Livia R Rego, Carlo M Gaddi
- 3 **Are hue and saturation carried in different neural channels?**
Sarah E Regan, Robert J Lee, Donald IA MacLeod, Hannah E Smithson
- 4 **Using silent substitution to assay the retinoelectrophysiology of rod- and cone-based vision in mice carrying a red-shifted cone opsin**
Tina I Tsai, Anneka Joachimsthaler, Jan Kremers
- 5 **Perception of illusory scenes during transition between central and peripheral vision differs on the color content of excitation**
Maris Ozolinsh, Anna Pastere, Olga Danilenko, Vootele Tamme
- 6 **The dynamics of luminance adaptation in the mouse retina**

Anneka Joachimsthaler, Tina I Tsai, Jan Kremers

- 7 **The effect of eccentricity and light level on the time course of light adaptation mechanisms**
Pablo A Barrionuevo, Beatriz M Matesanz, Alejandro H Gloriani, Isabel Arranz, Santiago Mar, Juan A Aparicio
- 8 **Hue, saturation and brightness scaling of signals from single cones**
Brian P Schmidt, Katharina G Foote, Alexandra E Boehm, Austin Roorda
- 9 **Influence of changes in diffusivity of lighting on appearance of object surface**
Yuki Kiyasu, Yoko Mizokami, Hirohisa Yaguchi
- 10 **A new method to measure electroretinograms (ERGs) elicited by temporal white noise**
Jan Kremers, Beatrix Feigl, Avinash Aher, Declan McKeefry, Neil RA Parry, Ian J Murray, Andrew J Zele
- 11 **Development of a color graphic icon for image color content and color shifts**
Coralie Cauwerts, Sophie Jost
- 12 **Usher syndrome and colour vision**
Anne Kurtenbach, Gesa Hahn, Christoph Kernstock, Stephanie Hipp, Ditta Zobor, Katarina Stingl, Susanne Kohl, Crystel Bonnet, Saddek Mohand-Said, Isabelle Audo, Ieva Sleisoraityte, Ana Fakin, Mark Hawlina, Francesco Testa, Francesca Simonelli, Christine Petit, Eberhart Zrenner
- 13 **Correlation between the perception of color, shadows and surface textures and the realism of a scene in virtual reality**
Pedro J Pardo, María I Suero, Ángel L Pérez
- 14 **Pattern-VEP with rear projection of a ,blue-on-yellow' stimulus as objective tool in glaucoma diagnosis**
Folkert Horn, Laura Dussan-Molinos, Robert Lämmer, Jan Kremers
- 15 **Colour categorisation without colour naming**
Katarzyna Siuda-Krzywicka, Christoph Witzel, Emma Chabani, Myriam Taga, Laurent Cohen, Paolo Batolomeo
- 16 **Human S-cone ERGs in Trichromats, Blue Cone Monochromats and Enhanced S-cone Syndrome**
John Maguire, Neil RA Parry, Jan Kremers, Ian J Murray, Declan McKeefry
- 17 **Uniqueness of gold color perception compared with other glossy colors**
Tatsuya Yoshizawa, Tomohisa Matsumoto, Masayuki Sato, Keiji Uchikawa, Haruyuki Kojima
- 18 **Color discrimination, ophthalmological exam and genetic analysis of Tyr and opsin genes of an albino capuchin monkey (*Sapajus apella*)**
Leonardo D Henriques, Paulo RK Goulart, Daniela Maria Oliveira Bonci, Einat Hauzman, Felipe TGR de Vasconcelos, Ronaldo Y Sano, Jessica L Alfaro, Roberto C Leão, Givago S Souza, Luiz CL Silveira, Olavo F Galvo, Dora F Ventura
- 19 **Adaptation to hue variation in colourful ensembles**
John Maule, Anna Franklin
- 20 **Psychophysical and fMRI assessment of magnocellular and parvocellular responses in patients with Parkinson's disease**
Claudia Feitosa-Santana, Liana G Sanches, Marcelo M Felix, Edson Amaro Junior, Daniel Q Bertuzzi, Dora F Ventura

- 21 **Effects of language on colour discrimination are specific to hue-based basic colour categories**
Jasna Martinovic, Galina V Paramei, Karin Tuur, Joseph W MacInnes
- 22 **Optimization of lighting for paintings with psychophysics – influence of cultural factors**
Catarina FM Herdeiro, João MM Linhares, Sérgio MC Nascimento, Taisei Kondo, Yukinori Misaki, Shigeki Nakauchi
- 23 **How well do the Munsell and the Natural Colour systems describe the colours of natural scenes?**
Ruben C Pastilha, João MM Linhares, Ana IC Rodrigues, Sérgio MC Nascimento
- 24 **Empirical compensation of chromatic atmospheric effects**
Andreia E Gomes, João MM Linhares, Sérgio MC Nascimento
- 25 **The effects of laser safety protection goggles on colour arrangement tasks**
Annette Walter, Ninja Borgmeier, Thomas Fröhlich, Anselm Jünemann, Jan Kremers, Bettina Hohberger
- 26 **Neural correlates of blue-yellow asymmetries in #thedress**
Talia L Retter, O Scott Gwinn, Sean F O'Neil, Fang Jiang, Michael A Webster
- 27 **Chromatic composition and preferences of paintings – Comparative study for Japanese and Portuguese observers and paintings**
Taisei Kondo, Nobuyo Okada, Kanako Maruchi, Yukinori Misaki, Hiroshi Higashi, José AR Monteiro, Cristina Montagner, João MM Linhares, Sérgio MC Nascimento, Shigeki Nakauchi
- 28 **Chromatic sensitivity in Aniridia**
Hilde R Pedersen, Lene A Hagen, Erlend CS Landsend, Stuart J Gilson, Jon VB Gjelle, Øygunn A Utheim, Tor P Utheim, Maureen Neitz, Rigmor C Baraas
- 29 **Ethnic differences among Punjabi and Pukhtoon families with red-green colour vision deficiencies**
Muhammad S Akhtar, Mian S Zar, Muhammad Aslamkhan, Abdul R Haris
- 30 **Luminance modulates color detection threshold in natural scenes**
Camille Breuil, Simon Barthelmé, Nathalie Guyader
- 31 **Color vision barrier-free illumination by composed with only white light for deuterans**
Tetsu Ushirogouchi, Michitomo Ishii, Toshihiro Bando, Katsunori Shimohara
- 32 **Color processing in real and artificial neural networks**
Alban Flachot, Karl Gegenfurtner
- 33 **A novel genetic cause of congenital tritan deficiency**
Daniela MO Bonci, Mirella TS Barboni, Balazs V Nagy, Einat Hauzman, Leonardo D Henriques, Luiz CP Baran, Kallene SM Vidal, Dora F Ventura
- 34 **Perceptual resolution of color for 16 chromatically ambiguous objects**
Emily Slezak, Steve K Shevell
- 35 **Verification of the simulation of anomalous trichromats with multispectral images**
Miharu Kato, Yoko Mizokami, Hirohisa Yaguchi
- 36 **Salience of spatiochromatic patterns measured with adjustment and alternative forced choice tasks**
Amanda Hardman, Jasna Martinovic
- 37 **Threshold detection and suprathreshold perception in anomalous trichromats**
John E Vanston, Katherine EM Tregillus, Michael A Crognae

- 38 **Correlation between S-cone adaptation and chromatic detection thresholds showed different tendencies among various chromatic contrast conditions**
Lin Shi
- 39 **Possible influences on color constancy by motion of colour targets and by attention controlled by gaze-state**
Lifang Wan, Keizo Shinomori
- 40 **Chips in the sunshine; superior colour constancy with real vs simulated Munsell chips under illuminants adjacent to the daylight locus**
Jeremiah M Kelly, Ausra Daugirdiene, Ian J Murray, Janus Kulikowski
- 41 **Color constancy and the spatial frequency decomposition of images**
Laysa Hedjar, Arthur G Shapiro
- 42 **Testing perceptual similarity in uniform color spaces**
Robert J Ennis, Qasim Zaidi
- 43 **Contrast adaptation and artificial lighting**
Ivana Ilic, Lorne Whitehead, Michael A Webster
- 44 **An enhanced colour vision test for younger children – Preliminary validation data**
John Parkes, Andrew Anderson, Daryl Guest, Tim Martin
- 45 **Contrast-dependent red-green balance shifts are exclusive to brown/yellow stimuli**
Tanner DeLaywer, Melissa Tayon, Chia-li Yu, Steven L Buck
- 46 **Using clinical color vision test to predict CN lantern pass rates at different viewing distances**
Jeffery K Hovis, Ali Almustanyir
- 47 **Reflectance discrimination under complex environmental illumination**
Takuma Morimoto, Hannah E Smithson
- 48 **History of color vision assessment for aircrew in the United States Army Air Corps and United States Air Force**
Steven C Hadley, Doug Ivan
- 49 **Genetic epidemiology of red-green colour-blindness in Pakistani Pakhtuns**
Abdul R Haris, Mian S Zar, Muhammad S Akhtar, Muhammad Aslamkhan
- 50 **Spectral comparison of color fidelity metrics CIE CRI and IES TM-30-15**
David Rodríguez, Jesús M. Quintero
- 51 **Genetic analysis of the LWS opsin gene in three owl species and circadian habit**
Felipe TGR de Vasconcelos, Einat Hauzman, Jerome Baron, Dora F Ventura, Daniela MO Bonci
- 52 **Colour discrimination and the Cambridge colour test: Reliability of discrimination ellipses in colour space**
Nabeela Hasrod, Alan Rubin
- 53 **Retinal morphology and the evolution of the opsin genes in diurnal and nocturnal Colubrid snakes**
Einat Hauzman, Daniela MO Bonci, Elkin YS Villota, Maureen Neitz, Dora F Ventura
- 54 **Electroretinographical determination of human colour vision deficiencies**
Avinash Aher, Cristiane MG Martins, Mirella TS Barboni, Balazs V Nagy, Einat Hauzman, Daniela MO Bonci, Dora F Ventura, Jan Kremers

**Posters will be on display throughout the symposium.*

**Presenters of odd and even-numbered posters will be available during Poster session 1 and 2 on 19th and 20th August, respectively.*