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Display spectra emission induced illusory scene perception

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Now-a-days humans are changing their habits and people spend lot of time daily looking into flat light emitting screens as computer screens, mobile devices or large aperture TV screen displays changing with time into colourful objects. But the total amount of hours and the spectrum of colour content of observable scenes are unfavourable moments in doing that. Spectrum of colours in displays does not respond to natural colours that are seen all around us. In modern emitting displays white light is composed from the relatively narrow bands of blue, green and red emission that promotes remarkable absorption of light energy especially in short wavelength (light blue component) spectrum in the eye tissues that protect eye retina from too much exciting in macula pigments and in melanopsin photoreceptors responsible for appropriate daily melatonin synthesis in human body especially in evening hours. In old age that can cause so called age related macular degeneration ARMD resulting to partial or total blindness or another body disturbance that leads to the loss of regular circadian (daily sleep) rhythms. These problems are no secret to the health of employees and advise vitamins and feed additives, developers of displays modify emission spectrum, introduce evening colour mode, but problems still remain and need not to be ignored. Another field of trouble is non-correct perception of

visual scenes displayed on the screen. Here, confusions have either physical basis (eye refraction index dispersion) or perceptual basis. Different eye refraction index causes perception of scene that arranged in different screen depth depending on stimulus colour called as colour stereopsis. This phenomenon is more expressed if primary display colours have narrow spectral bands. Our brain response to optical stimuli is a product of our learning during our development in childhood *via* flat displays, where we meet new kind of visual excitement and our brain recognizes stimuli in a false way by causing visual illusions. They are more pronounced in visual periphery and in cases when stimuli are dynamic. Here, role can play the different neural signal processing pathways for red and green excitement unlike to blue excitement.

Biography

Maris Ozolinsh has completed his PhD at University of Latvia in the field of lasers and electro optics. He is a Professor in Physics and the Director of the Laboratory in the Institute of Solid State Physics at University of Latvia. His recent research was focused on physiological optics, colour research and visual perception.

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