EPFL

Daylightful indoors what we see and what we perceive

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LIPID Laboratory of Integrated Performance in design



NOW THE WINDOWLESS BUILDING WITH ITS OWN CLIMATE By C. F. TALMAN Francis Keally, Architect. New York Times 1857; Aug 10, 1930; ProQuest Historical Newspapers The New York Times pg. XX4

NOW THE WINDOWLESS BUILDING WITH ITS OWN CLIMATE

Engineers Promise Germ-Free Atmosphere and Artificial Sunlight for Those Who Must Spend Much of Their Lives at Work Indoors



The Cat is the Basile is Breathing Synthetic Alc.

By G. F. TALDIAN. The is a final with make bit and the copy proving without dynamics of index info-tion of the way real information for heat party in many final dia way real information for the program in many final party of the proving statement is a first proving and the proving the proving statement is a first proving an exclusion in the statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving and exclusion in the proving statement is a first proving an exclusion in the proving statement is a first proving and exclusion in the proving statement is a first proving and exclusion in the proving statement is a first proving statement in the proving statement is a first proving statement is a first proving statement in the proving statement is a first proving statement is a exclusion in the proving statement is a first pr the little internal line to deputy binned of international and when when form physical childrender for hadner any its line broken by the aburdan children after bound of the developer process or in prostly upture the in spect tabled, from the mandles, at bast is tabledge forward.

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London office it was front that a wooding is a big time at support, unit profit court for provid, the initialing inginance have not yet, that the four for the day of our an anti-any profit restriction of the second The second processing the second processing to light. Lori, bit wit bade, the space Sephinics that does does bei with gives but if is a plan. Undfoldal by the fait that an and the parties has been anothered

The High Chef of Basilyt.
The High Chef Of B



New Plaste Are Graving & Artificial Devilabe.

of ages open marked. The whole within thigh it was particular mitpert of what the decorated only wantier to

"Spin histopy" is now similaring at . Now then have be a consent to approximated associat of attention, the Beld of experimental plant plant provident for motifs and a tempter usings, we study find that a with of includentiate description is properly mappe of commutation attracts the perlimit here included produced produced produced produced of a statistic and with with it was sometry relations, by appropriate approximate of tight. They be declaration building to both the by supplying the distribu-function and sometry with a size from the form in the boundary matter ains al Radietini and Organizza; the Wold, WM, the elimple, the while, though for the present it growth of pupps druck the anter-medicate its attactive to the effective which and their takes and contrained of radius, reary, an plant, will all by adding a prelam symmet of ex-Doubley states hormspiriting sectors line double to the kinemission, say country then, and the principal in ad the efficiency on addition 894. how no a committee bains to that Nuber Alex Enviroled.

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visual discomfort and gaze dynamics

Prof. Mandana Sarey Khanie LIPID PhD+PostDoc alumna Asst. Prof. at DTU, Denmark





perceived light



field of view





Dr. Jan Wienold Senior Scientist at LIPID, co-advisor

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visual and thermal comfort interactions

Prof. Giorgia Chinazzo LIPID PhD+PostDoc alumna Asst. Prof. of Instruction at Northwestern U, USA



Your Rainbow Panorama by Studio Olafur Eliasson



 does thermal perception depend on color of light?



visual and thermal comfort interactions



color of light & temperature

light quantity & temperature



visual and thermal comfort interactions





impact of visual environment on thermal perception

###

Temperature [°C]

###

26

impact of brightness on thermal comfort

color of light & temperature

slightly warm

Perceived thermal envirobment

neutral

slightW cool

cool

cold

19

###

light quantity & temperature



visual discomfort and color





macular pigmentation (MPOD) and light-induced eye responses





spatial contrast

Prof. Siobhan Rockcastle LIPID PhD+PostDoc alumna Asst. Prof. at University of Oregon, USA



luminance map





spatial contrast







spatial contrast

dynamic spatial and temporal qualities of daylight



calming





First Unitarian church Louis Kahn



Serpentine Pavilion



exciting







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for 30 participants















façade patterns

inspiration from worldwide architecture









façade patterns and daylight composition

consensus on pattern attributes (from designers)







most exciting least exciting



most calming least calming



assessing human response to daylight patterns

VR immersion











i one of the least exciting





by 415 participants from Greece, Switzerland, and Norway

perception and appraisal of views out



Yunni Cho | Stella Z. Zhang PhD Candidates





Prof. Caroline Karmann Assoc.Prof at KIT, Germany LIPID PostDoc alumnus, co-advisor

Image by: Yunni Cho, 'biophilia (noun)', SciFilmIt Hackathon 2021



perception and appraisal of views out

influence of naturalness and dynamics



Yunni Cho | Stella Z. Zhang PhD Candidates



movement and daylight changes

Komorebi-inspired patterns and view enhancement











HEALTH IMPACTS

Images credit: Megan Danell, EPFL-LIPID

photobiology



Cortisol Attention Melatonin Body temperature



CIRCADIAN RHYTHMS

redit: Megan Danell, EPEL-LIPID



biological clock

Dr. Maria L. Amundadottir LIPID PhD alumna Co-founder of OCULIGHT, data scientist



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light exposure

- intensity
- wavelength
- duration
- timing
- history





.440

hyperspectral' scenes,

light hygiene











Dr. Forrest Webler LIPID PhD alumnus then CTO at LYS Technologies

EPFL

light hygiene







spectrace







Build for Life house prototype, Denmark Effekt Arkitekter

EPFL





Build for Life house prototype, Denmark Effekt Arkitekter







Build for Life house prototype, Denmark Effekt Arkitekter







Vitality

Vitality describes the non-visual potential of daylight to impact alertness as it accumulates over time. Read more

insufficient daily dose (nvR _D < 4.2)	429
• intermediate daily dose $(4.2 \le nvR_D \le 8.4)$	419
recommended daily dose (nvR _D > 8.4)	179





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3XN | DENMARK



EQUITY



OCULIGHT dynamics



CIRCA DIEM Marilyne Andersen *et al.* 2021-2023



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—HEAD Genève



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