

In the spotlight

Topologically Protected Parametric Wavelength Conversion in a Valley Hall Insulator

Laser & Photonics Reviews

SUTD Authors: Byoung-Uk Sohn, Ju Won Choi, George F. R. Chen, Hongwei Gao, Dawn T. H. Tan

We studied topologically protected light propagation without backward scattering loss in a new type of spatially patterned material even in the presence of very sharp edges in the path. Furthermore, when we use very intense light, the topological features can alter how the light travels along these edge paths. This phenomenon allows control of these special light paths in new ways.

We found that we can change the color of light through interactions with another light source in a special nonlinear material as they propagate along these protected edge paths. We did this using very low-power optical signals. The altered light travels just as well along a zigzag path as it does along a straight path, without scattering backwards.

We also observed that near one end of the light's color range, the speed of propagation of light slows down and becomes more intense. This usually causes problems with light scattering backward, but our special edge paths overcome this issue. Our study shows that topology may enhance and bring about new capabilities in the manipulation and generation of light.



"Our study shows that topology may enhance and bring about new capabilities in the manipulation and generation of light."

- Sohn Byoung-Uk

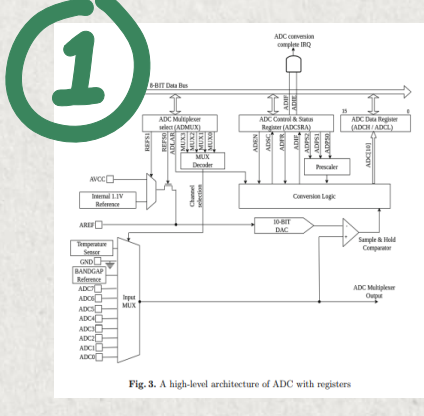
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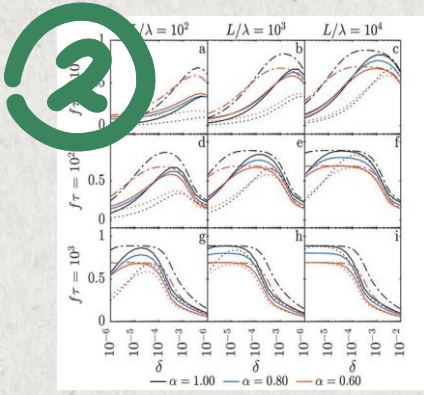
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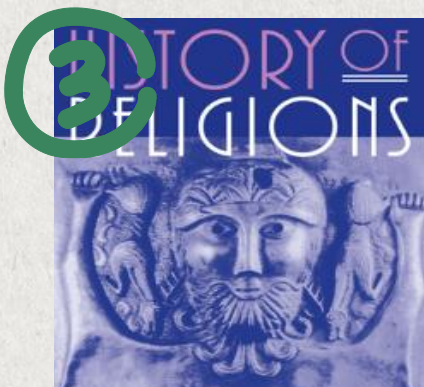
SUTD Authors: Chekole, Eyasu Getahun; Thulasiraman, Rajaram; Zhou, Jianying
Information Systems Technology and Design (ISTD)



2 Modeling resonant energy absorption of finite laser pulses in a doped porous dielectric slab

Journal Of Applied Physics

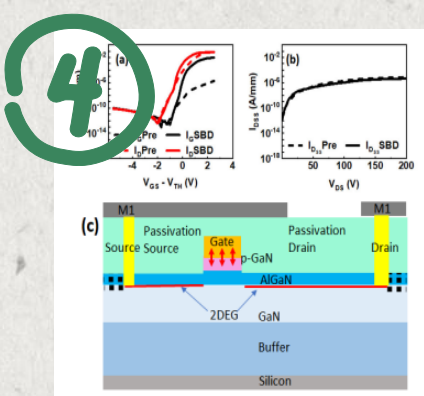
SUTD Authors: Kee, Chun Yun; Kanwal, Samra; Ang, L. K.
Science, Mathematics and Technology (SMT)



3 Toward A History Of Theravada Cosmological Literature

History Of Religions

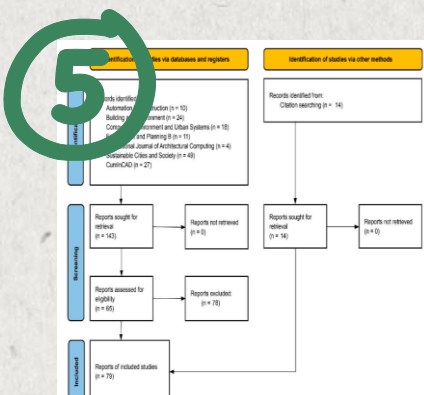
SUTD Author: Gornall, Alastair
Humanities, Arts and Social Sciences (HASS)



4 Successive Multi-Stage Compliance-Ramp Voltage Sweep Methodology (MSC-RVS) for Understanding the Evolution of Gate Breakdown Mechanisms in p-GaN HEMTs

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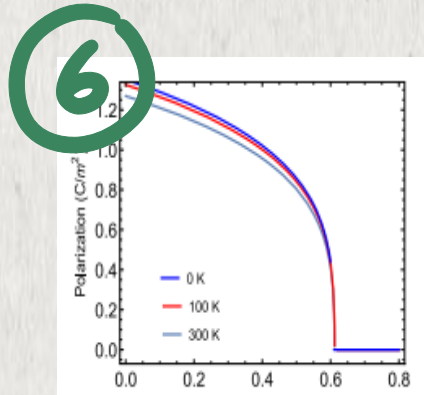
SUTD Authors: James, Jerry Joseph; Raghavan, Nagarajan
Engineering Product Development (EPD)



5 Computational Optimisation of Urban Design Models: A Systematic Literature Review

Urban Science

SUTD Author: Tay, JingZhi; Ortner, Frederick Peter; Aydin, Elif Esra
Architecture and Sustainable Design (ASD)



6 Composition and temperature dependent remanent polarization and coercive field in wurtzite AlScN ferroelectric memory materials

AIP Advances

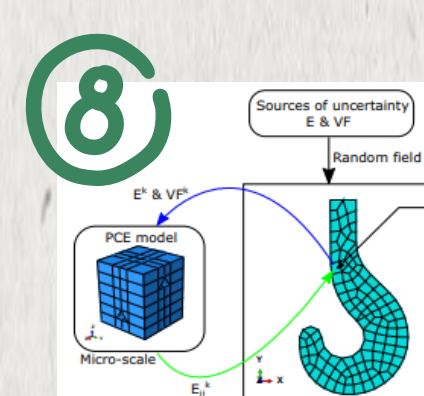
SUTD Authors: Martinez, J. C.; Loke, Desmond K.
Science, Mathematics and Technology (SMT), AI Mega Centre



7 Hard-to-Detect Obstacle Mapping by Fusing LIDAR and Depth Camera

IEEE Sensors Journal

SUTD Authors: Jeyabal, Sidharth; Sachinathana, W. K. R.; Samarakoon, S. M. P. Bhagya; Elara, Mohan Rajesh
Engineering Product Development (EPD)



8 Uncertainty propagation in fused filament fabrication process: a multiscale approach

International Journal Of Advanced Manufacturing Technology

SUTD Author: Kizhakkinan, Umesh
DmanD