

## In the spotlight

### Limitations and possibilities of topological photonics

*Nature Reviews Physics*

SUTD Author: Daniel Leykam

In our article, we examine the real-world potential and limitations of topological photonics—a field that use the geometrical and topological properties of light waves to design robust optical cavities and waveguides. These states promise devices like backscattering-immune waveguides and novel lasers. However, unlike the topological electronic materials they are inspired by, photonic topological protection is often approximate, meaning its benefits depend strongly on the design and context.

For example, one-way backscattering-immune topological waveguiding is typically limited to narrow frequency ranges. Other platforms, such as all-dielectric topological photonic crystals, offer more flexibility but face challenges like fabrication roughness-induced scattering. Our analysis clarifies which features are truly topological and which are incidental, guiding future efforts toward practical applications. Ultimately, topology provides a powerful design principle—but not a universal solution—for next-generation photonic technologies.



*“Topology offers powerful design principles for photonics, but its protection is often approximate, not absolute.*

*- Daniel Leykam*

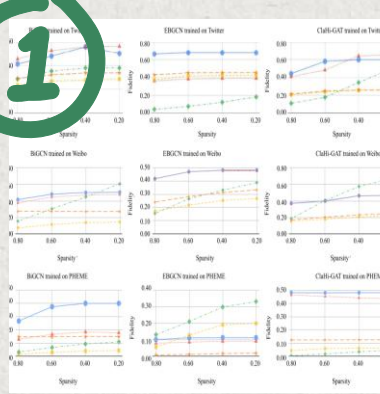


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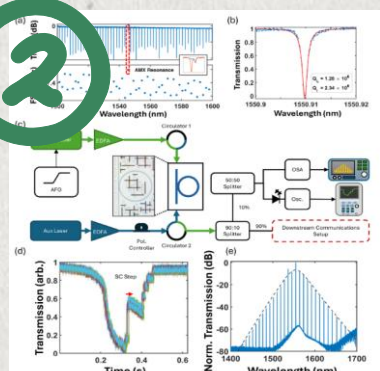
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*IEEE Transactions On Computational Social Systems*

SUTD Authors: Daniel Wai Kit Chin, Roy Ka-Wei Lee

*ISTD*

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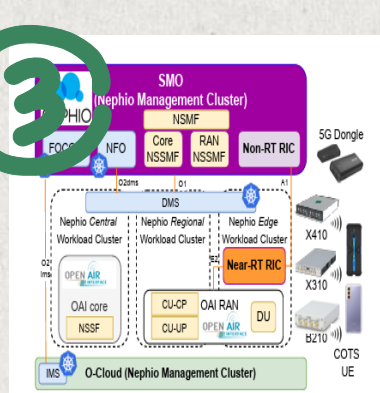
### Deterministic, Reconfigurable Micro-Resonator Soliton Crystals for Intensity-Modulated Direct Detection Data Transmission

*Laser & Photonics Reviews*

SUTD Authors: Kenny Y. K. Ong, Xavier X. Chia, A. Aadhi, George F. R. Chen, Ju Won Choi, Byoung Uk Sohn, Amdad Chowdury, Dawn T. H. Tan

*Photonic Devices and Systems Group, EPD*

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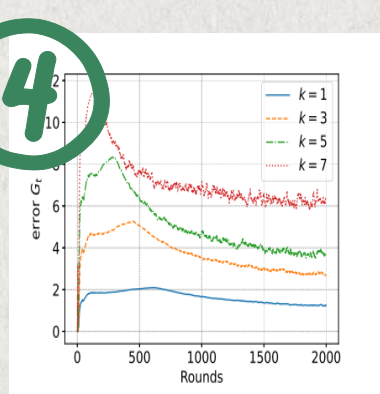
### INA-Infra: An Open and Extensible Infrastructure for Intent-driven Network Automation Research

*2024 IEEE Globecom Workshops*

SUTD Authors: Nguyen-Bao-Long Tran, Tuan V. Ngo, Mao V. Ngo, Binbin Chen, Jihong Park, Tony Q. S. Quek

*ISTD*

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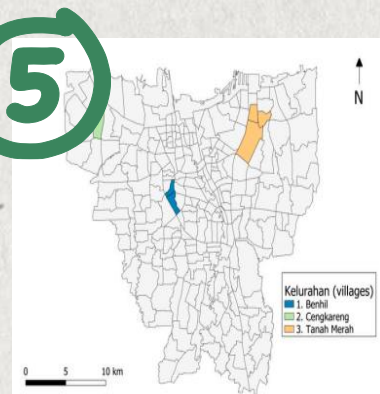
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*IEEE Transactions On Networking*

SUTD Author: Li Hongbo

*ESD*

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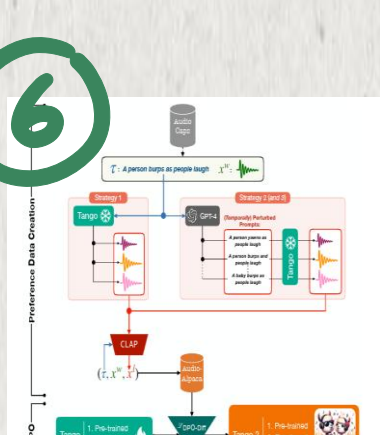
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*Urban Science*

SUTD Author: Hamzah Yaacob, Rafael Martinez

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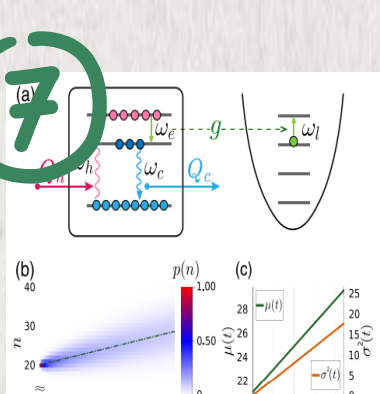
### Tango 2: Aligning Diffusion-based Text-to-Audio Generations through Direct Preference Optimization

*Proceedings Of The 32nd ACM International Conference On Multimedia*

SUTD Authors: Navonil Majumder, Chia-Yu Hung, Deepanway Ghosal, Soujanya Poria

*ISTD*

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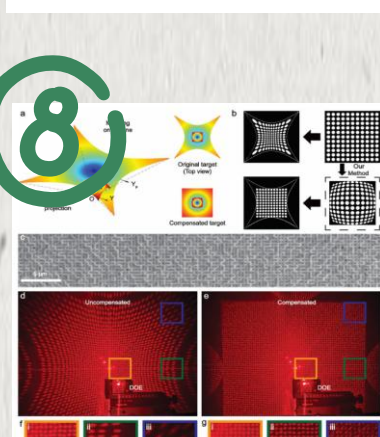
### Quantum thermal machines and the emergence of different thermodynamic functioning regimes from finite coupling to a load

*Physical Review A*

SUTD Authors: S. Gauthameshwar, Noufal Jaseem, Dario Poletti

*SMT, EPD*

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### Wide Angle 3D Imaging without Distortions

*Laser & Photonics Reviews*

SUTD Authors: Bochang Wu, Cheng-Feng Pan, Max J. H. Tan, Sarah J. Y. Loo, Wang Zhang, Xiaoyan Zhou, Lei Chen, Zhenchao Liu, Hongtao Wang, Joel K. W. Yang

*EPD*

