IMPact@SUTD
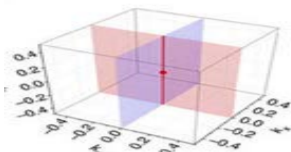## Impossible Made Possible by architects, catalysts and technologists

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Mapping patent classifications: portfolio and statistical analysis, and the comparison of strengths and weaknesses
Scientometrics

SUTD Author: Bowen Yan

"Prior studies have suggested the International Patent Classification (IPC) are the most suitable representations of technology domains. However, this classification uses up to fourteen characters for the indexing. Recently, the Cooperative Patent Classification (CPC) developed cooperatively by the European and US Patent Offices provide a new basis for mapping patents and portfolio analysis."
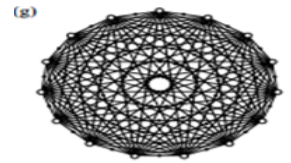
---Bowen Yan

Three-dimensional Pentagon Carbon with a genesis of emergent fermions
Nature Communications

SUTD Authors: Zhi-Ming Yu & Shengyuan Yang

"Can one simulate astrophysical phenomena in table-top experiment? This work explores this intriguing possibility. It shows that effects such as black holes, gravitational lensing, and Hawking radiation can all be studied in new materials called topological semimetals. This will enable us 'to see a universe in a grain of sand'."

---Shengyuan Yang

Unconditionally verifiable blind quantum computation
Physical Review A

SUTD Author: Joseph Fitzsimons

"Quantum computers hold the promise of vastly more efficient algorithms for certain tasks. However, the fragile nature of quantum systems makes it possible that errors in the computation will result in an incorrect output for the computation. We introduce an efficient means of verifying that the output of a calculation performed on a quantum computer is indeed correct."
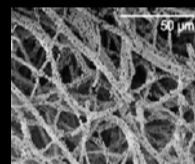
---Joseph Fitzsimons

3D Printed Active Origami with Complicated Folding Patterns
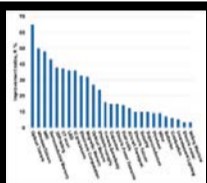*International Journal of Precision Engineering and Manufacturing-Green Technology*

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A high output voltage flexible piezoelectric nanogenerator using porous lead-free KNbO3 nanofibers
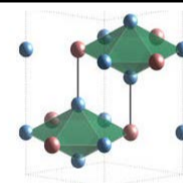*Applied Physics Letters*

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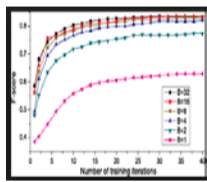Plos One

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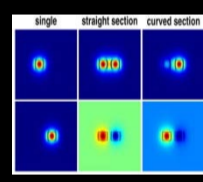*npj Quantum Materials*

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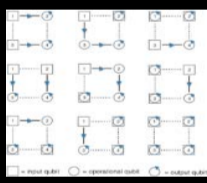*Bioinformatics*

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Flow Ambiguity: A Path Towards Classically Driven Blind Quantum Computation
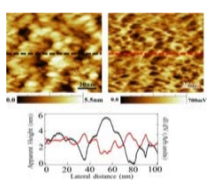Physical Review X

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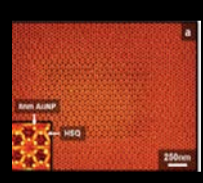Journal of Algebraic Statistics

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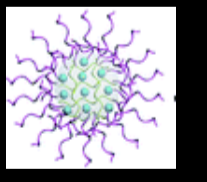*Journal of Applied Physics*

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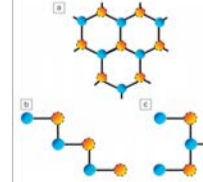*Nanoscale*

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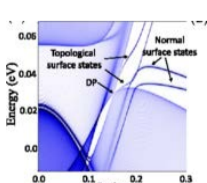SUTD Authors: Shuqing He, Xinyu Zhao & Mei Chee Tan

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