



11 March 2026

Scientists control ‘free-flowing’ electric currents with light



By controlling magnetic fields using light, a team of researchers led by NTU scientists has solved a long-standing challenge to precisely direct electric currents produced by quantum materials. Their findings unlock new avenues for controlling the flow of electricity through such materials and could herald the age of energy-efficient quantum computing devices. The research is published in *Nature* in January.

Like water moving through lakes and rivers, electrons in electric currents encounter resistance when flowing through electronic devices. This resistance generates large amounts of heat, which poses a problem for large computing facilities such as data centers and quantum computers, incurring major costs for cooling.

With artificial intelligence driving the demand for more computing applications, there is a need to produce electricity that flows without resistance to avoid generating excessive amounts of heat. These “free-flowing” electric currents could pave the way for novel low-power electronics and new quantum computing technologies.

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