

# Green Computing and DX

**R&D Project Title :** Low-rank computing models and efficient optical implementations of spatial photonic Ising machines

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**R&D Team :** IST, Osaka University



## Summary :

The project objective is to establish a fundamental computing technology of spatial photonic Ising machines that realizes high speed and efficiency for real-world combinatorial optimization problems in specific application domains.

This will be achieved by the interdisciplinary research team conducting

- Mathematical studies on low-rank computing models,
- Optical studies on efficient implementations,

and will be further advanced by vertical integration involving practical application studies and specialized optical device development.

Scenarios for contributing to carbon neutrality through spatial photonic Ising machines include:

- Reduction of both computation time and energy consumption in handling large-scale combinatorial optimization problems.
- Enhancement of social efficiency by extending applications to various real-world combinatorial optimization problems.

