Mehr Licht!
More Photonics for Intelligence

#E20

#Open Innovation#AI & Quantum Infrastructure

NTT-IFM: Mathematics Beyond Boundaries

Creating mathematics to reveal open problems and inspire innovation

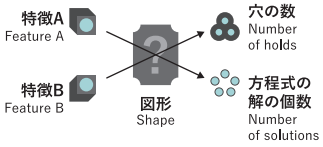
Technical Challenges & Goals

Advanced science and technology require new mathematics to uncover unknown structures and shared principles. NTT-IFM develops concepts and methods to tackle long-standing problems, connect research fields through mathematics, and offer new perspectives and theoretical foundations for future science and technology.

NTTが切り開く数学のフロンティア NTT-IFM: Pioneering frontiers of mathematics

理論構築 Theory development

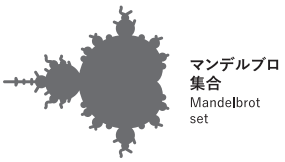
一般化モチーフ理論
Generalized motive theory



代数多様体(抽象的な図形)の特徴を統一的に取り扱う理論の構築・提唱
Developed a new theory for uniformly treating features of algebraic varieties (abstract shapes)

問題解決 Problem solving

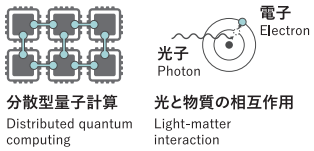
Morton-Vivaldi予想の部分的解決
Breakthrough on a long-standing conjecture



マンデルブロ集合に隠された整数論的現象に関する予想を部分的に証明
Partially proved a decades-old conjective on hidden arithmetic patterns in the Mandelbrot set

量子情報科学 Quantum information science

現代数学の量子情報科学への貢献
Contributions to quantum information science



表現論・代数幾何・整数論などの現代数学に基づき量子情報科学の成果を創出
Achieved advances in quantum information science driven by modern mathematics

Key Technologies

Core Technologies

- Exploring mathematics for future research, revealing shared structures and new links across fields
- Leading generalized motives; Morton-Vivaldi breakthrough; surprising math-quantum unity

Key Differentiators

- A rare corporate pure-math institute creating concepts and methods that extend existing theories
- Broader unification; a 30-year dynamics breakthrough; proof that math and physics models coincide

Use Cases

Information Technology (IT)

Researchers in industry, academia, and public institutes use NTT-IFM research to uncover common principles and unknown structures in complex phenomena and identify new technologies and research questions.

Exhibitors
NTT Communication Science Laboratories

Related Links
https://www.rd.ntt/ifm/

CONTACT:Institute for Fundamental Mathematics