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2D Logistic-Sine-Coupling Map for Image Encryption

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Highlights

- We present a two-dimensional (2D) Logistic-Sine-coupling map (2D-LSCM). Performance estimations demonstrate that it has better ergodicity, more complex chaotic behavior and larger chaotic range than several newly developed 2D chaotic maps;
- Using 2D-LSCM, we further propose a 2D-LSCM-based image encryption algorithm (LSCM-IEA);
- A novel permutation algorithm is designed to fast permute image pixels while a diffusion algorithm is developed to spread little change of plain-image to the whole encrypted result;
- Security analysis demonstrates that LSCM-IEA has a high security level and can outperform several advanced image encryption algorithms.

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