PyLattice Notes

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1 Introduction

This `python` package is intended for Lattice theories research.

2 Linear Algebra

2.1 Scalar

`Real`

`Complex`

2.2 Vectors

`VectorReal`

`VectorComplex`

2.3 Matrix

`RealMatrix`

`ComplexMatrix`

`Identity`

2.4 Matrix Vector

`VectorRealMatrix`

`VectorComplexMatrix`

3 Lattice Objects

3.1 Lattice Scalar

`LatticeReal`

`LatticeComplex`

3.2 Lattice Matrix

`LatticeRealMatrix`

`LatticeComplexMatrix`

3.3 Lattice Vector

`LatticeVectorReal`

`LatticeVectorComplex`

3.4 Lattice Vector Matrix

`LatticeVectorRealMatrix`

`LatticeVectorComplexMatrix`

4 Parallelization

$$idx(\mathbf{x}, \mathsf{x}) \tag{1}$$

4.1 communication

4.2 I/O

`LatticeBase`, `LatticeMPI`

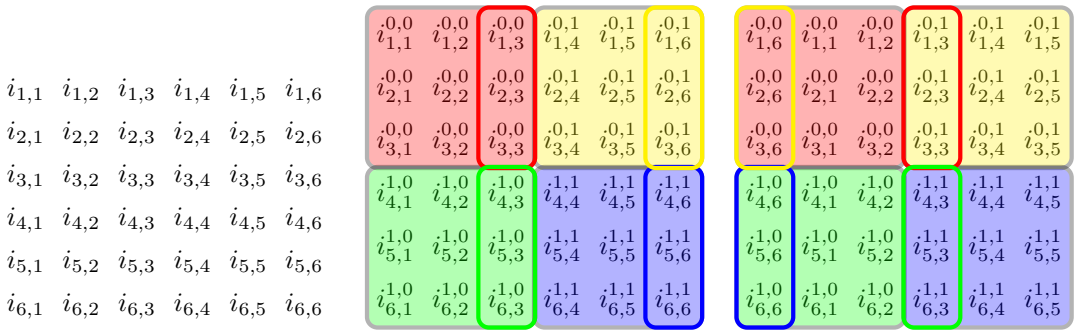

Figure 1: Lattice partitioning for 4 processes. Halo boundaries are highlighted in the axis 1.

5 Example

Ising Model