
isypy Documentation

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CHAPTER 1

Introduction

isypy is a small educational program demonstrating the use of open-mpi with python. This program calculates many observables associated to the classical and notorious Ising model. The simulation can be carried out for one, two or three dimension, with anisotropic interactions on the square lattice.

Please read the *Installation* instructions, then follow up with the simple *Tutorial*.

CHAPTER 2

Questions and Issues

Please submit any issues or questions to the public github repository, which can be found here:

3.1 Basic installation (no parallalization)

It is recommended to try the basic installation before trying the mpi version. The installation steps are very simple:

```
pip install isypy
```

3.2 MPI installation

It is recommended to install pipenv first.

```
pip install pipenv  
pipenv install isypy mpi4py  
pipenv shell
```


Once **isypy** is installed, copy the following yaml code in a file called to your liking, why not **params.yml**.

```
---  
MonteCarlo:  
  ThermalizationTime: 0.15  
  MeasurementTime: 1.0  
  UpdatesMeasurement: 100  
  Seed: 1204  
  
Model:  
  LatticeSize: [4, 4, 1]  
  Beta: 1.0  
  HField: 1.1  
  JParameters:  
    Jx: -1.0  
    Jy: -1.0  
    Jz: 0.0
```

Please ensure that the indentation is the same as above. In doubt, please lint your file with the tool *yamllint*. The simulation can be run by using the following command:

```
python -m isypy params.yml
```

Or if you have installed with *mi4py*, and you want to use 4 processors:

```
mpirun -np 4 python -m isypy params.yml
```