

The Kuramoto Model

Technical report for python numerical project

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I Functional requirement of the program

All the functions which are used for the computing or the displaying of the results are called in the main file. At first there are the functions which create the initial values in respect of the parameters set in the settings file, then these values are stocked in data (.dat) files in a directory named "parameters". With these data files, we don't have to repeat the calculations every time we want to test something. Then you have the functions that compute the results (the phase of the oscillators, the complex mean average, and the Shannon entropy), which are stocked in data files in the same directory. And finally there are the functions that display the graphs by using the module `matplotlib.pyplot`. In this section we will describe the functions that create the data files and their data. Firstly the initial data is created through the `class Data` which is in the data file. And the computing of the other values is in the `class KuramotoModel` which is in the kuramoto file. The initial data is created by the function `data.init_data(state)`¹:

<code>data.init_data(state)</code>		
Description	Input	Output

Table 1: function `data.init_data()`