

# Random Excursions Variance Test

The program implements the Random Excursions Variance Test described in NIST section 2.15.

## 1 Input

- output-file – the name of the output file, where p-values will be saved; when the name is empty it prints the values to the screen (default: `ran_exc_var_p_values.csv`),
- input-file – the name of the input file; the file must be in pickle format (default: `generated_numbers.pkl`) ; it requires empty input-dir parameter.
- input-dir – path to the directory with files that fulfill the requirements stated below; the directory path cannot have slash or backslash at the end (default: empty string)

The input file or files (in .pkl format) must have the following key value pairs:

- M – maximum value of provided numbers + 1, must be a power of 2,
- numbers – a list of integers in range 0 to M-1, M times length of numbers list should be larger than 1 000 000.

## 2 Output

When the output file name is empty the p-values are printed to the screen. In other cases the program generates an output file in csv format with the string "p-value" in the first row and p-values in the following rows (one value per row).

## 3 Examples

```
python z1_ran_exc_var_test.py --input-file generated_numbers.pkl
python z1_ran_exc_var_test.py --input-dir D:\dokumenty\zsp\generated_files
python z1_ran_exc_var_test.py --output-file ran_exc_var_p-values.pkl
```