## **Input parameters**

The example of input files are '\*.in'. The execution files are '\*.sh'. The order of input parameters must follow the input file examples, and blank lines are not allowed. Explanations regarding the input parameters in the input file are provided below.

- $\triangleright$  n qv (integer): the number of rows (Q) in the experimental data.
- > min qv range (integer): the first row of data used for optimization calculation.
- > qv range2 (integer): the last row of data used for optimization calculation.
- > n\_bin (integer): the number of states on the coordinate system to describe PDD.
- ➤ k\_gradient (integer): the choice of optimization equation.
  - 0: Eq. (2)
  - 1: Eq. (17)
  - 2: Eq. (18)
- in exp file (character): the file name for pseudo-experimental SAXS data.
- bin header (character): the file header name of SAXS data for each state.
- bin header (character): the file footer name of SAXS data for each state.
- > pdd0 file (character): the file name for an initial ensemble.
- true pdd file (character): the file name for a true ensemble.
- ➤ k const (integer): the choice of constraints.
  - 0: No inclusion
  - 1: Included
- $\triangleright$  conf\_fac (real): the value for confidence parameter (required only when k\_const = 1).
- trans rate (real): the value for transformation rate
- > n trans (real): the number of transformation steps.
- > n out (integer): the number of out trans, which is described below.
- > out\_trans (integer): the transformation step, at which the data of the refined ensemble and SAXS are outputted.
- out\_step (integer): in addition to out\_trans, the data of the transformation are outputted at every out\_step step.
- out header (character): the name of file header for the output files.
  - 'out\_header'//'\_opt.log': kai2, AREP, KL-divergence from initial PDD are outputted at every transformation.