Use of Parallel Computers in Rational Design of Redundant Sensor Networks

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Abstract
A general method to design optimal sensor networks able to estimate process key variables within a required precision was recently proposed. This method is based on the data reconciliation theory and the sensor network is optimised thanks to a genetic algorithm. To reduce the solution time, two ways of parallelizing the algorithm have been compared: the global parallelization and the distributed genetic algorithms. Both techniques allow reducing the elapsed time but the second one is more efficient.

Keywords: parallelization, genetic algorithm, sensor network, data reconciliation, MPI