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## The parallel framework for the partial wave analysis

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Partial wave analysis is a fundamental technique for extracting hadron spectra and hadron decay properties. It is employed in some current experiments like BES-III, LHCb, COMPASS, and future ones like PANDA. The analysis is typically performed using the event-by-event maximum likelihood method. For the BES-III experiment, fitting the accumulated data (about 1.225 billion J/psi decays) using currently employed software takes a long time which significantly complicates and sometimes restricts the data analysis. The development of new multicore CPU's and GPU's makes using parallel programming technologies natural to decrease the data fitting time. For this purpose, the parallel framework for partial wave analysis is being developed. Parallelization options employing various computing technologies including OpenMP, MPI, and OpenMP with Xeon Phi co-processor extensions were studied taking into account distinctive features of the task and external software used in the reaction. They were tested using the resources of the heterogeneous cluster HybriLIT. The results on calculation speedup and efficiency as well as a comparative analysis of the developed parallel implementations are presented.

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