

This bachelor thesis deals with refactoring of a part of the Data Quality Monitoring (DQM) code for the Belle II vertex detector. In the second part of the thesis, monitoring of vertex detector half-shells movement over time is implemented.

After summarizing the basic information about the Belle II experiment, its vertex detector and the basf2 software system, we will describe the functional behaviour of the data quality monitoring modules. We analyze the code of the `TrackDQM` and `AlignDQM` modules and fix several errors. As a part of refactoring, we divide the calculations into several simpler parts and significantly reduce the code duplication. Finally, we add histograms of residuals from the half-shells, which we evaluate on real data, fit and display as a function of time.

The contribution of this work is a code that is easier to maintain and extend, as well as free of some obvious bugs. Another result is a discovery of periodical movements of vertex detector half-shells, the understanding of which can lead to improvement of detector alignment.