## Description for the general public

The mystery of the creation of the Universe has always been in interest of mankind. During the Big Bang, the equal amounts of matter and antimatter have been created, but the observation of the Universe confirms that its evolution did not conserve this symmetry. The LHCb experiment, one of the four large experiments at the Large Hadron Collider - LHC try to explain this phenomenon. This circular machine accelerates protons or heavy ions and colliding them. The result of this collision are particles that can be observed in especially designed detectors that operate at LHC. One of them is a single-arm LHCb spectrometer, which is dedicated to studying matter anti-matter asymmetry and searching for New Physics phenomena. The analyses performed by LHCb Collaboration in years 2010-2018 resulted, among others, in the first observation of $Bs \rightarrow \mu\,\mu$ decay, discovery of tetra- and pentaquarks and more. These studies are a big step in searches of New Physics, however, using only current data samples, it is not possible to draw any final conclusions regarding discoveries of phenomena outside the Standard Model. For this purpose, a project to modernize the LHCb detector is currently performed. The crucial part of the detector is the tracking system, which performs reconstruction of the trajectories of charged particles. One of the components of the future tracking system is a silicon, micro-stripe UT detector (Upstream Tracker). A critical part of the UT detector infrastructure is the software platform dedicated to monitoring the quality of physics data produced during the collision of hadrons in the detector. We intend to create an autonomous system, which will independently assess recorded data, considering not only current situation in the detector but also changes in its physical properties of the detector caused by radiation damage. The system will use the latest computational intelligence techniques. Also, a part of this project is related to using computational intelligence in the analysis of the $Bs \rightarrow D_S^* K^*$decay. The results of the analysis in the future will allow to determine the parameters of charge-parity symmetry violation (CPV). CPV is one of the factors, which explain the difference between amount of matter and antimatter in the Universe. Determination of this fundamental parameter is even more important considering that it is not theoretically predicted and it is measured only in high energy physics experiments.