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OR24 - Application examples of the machine learning in KEK

Tuesday, 12 September 2023 09:45 (20 minutes)

Machine learning (ML) is widely used and several tools are accessible for free so we easily tried them in several accelerator operations in KEK. One of the applications of compact ERL is beam tuning for infrared SASE FEL. It is used to maximize the intensity of the FEL light, which requires bunch compression, transverse beam matching at the undulator, small energy spread, and transverse emittance. ML makes it possible to optimize simultaneously and automatically with 5-6 parameters, therefore it is helpful for reducing the tuning time and human resource. Another application is an estimation of the hysteresis of the electrical magnet. Furthermore, we introduce some examples of beam tuning demonstrations at KEK-ATF for ILC project, and the electron-positron LINAC for SuperKEKB and PF.

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Session Classification: How Does the Machine Learning Integrate with Operation?