Contribution ID: **24**   Type: **Invited talks**

Anomaly Forecasting and Adaptive Learning in Fast Kicker Magnet Systems- 15'+5'

Thursday 10 April 2025 09:30 (20 minutes)

Kicker magnets are essential for particle beam injection and extraction within CERN's accelerator complex, where high reliability is crucial to maintaining the availability needed for numerous scientific experiments. This study proposes a machine learning approach for forecasting anomalies in these systems, aiming to proactively identify and isolate potential faults before failure occurs. To keep the anomaly detection model accurate over time, continual learning techniques are employed, allowing the model to adapt to evolving system dynamics without frequent retraining. This combination enhances the efficiency and stability of accelerator operations by ensuring the model remains up-to-date in the face of non-static data.

Author: ALGELLY, Malik Marco (Universite de Geneve (CH))

Co-authors: Prof. KALOUSIS, Alexandros (University of Geneva); KAIN, Verena (CERN); PAPASTERGIOU, Kostas (CERN); ELLISON, Patrick James; VELOTTI, Francesco Maria (CERN)

Presenter: ALGELLY, Malik Marco (Universite de Geneve (CH))

Session Classification: Anomaly Detection and Diagnostics

Track Classification: Anomaly Detection and Diagnostics