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## **A machine learning approach to shaping magnetic fringe fields for beam dynamics control**

*Wednesday, 10 May 2023 16:30 (2 hours)*

Fringe fields at the entrance and exit of multipole magnets can adversely affect the dynamics of particles in the beam, but there is also the possibility that fringe fields of the right form could be used to enhance the accelerator performance. Accelerator design work could benefit from efficient and realistic models of multipole fringe fields at an early stage in the design process. We explore novel techniques based upon analytical solutions of multipole fringe fields to produce magnets that satisfy specific requirements for the beam dynamics. Machine learning techniques are used in the design process currently being developed, to link properties of the beam dynamics to the magnet geometry in an efficient way.

### **Funding Agency**

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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