Contribution ID: **583**   Type: **Oral presentation**

Flow-based sampling for fermionic field theories

Thursday, 29 July 2021 13:30 (15 minutes)

Flow models are emerging as a promising approach to sampling complicated probability distributions via machine learning in a way that can be made asymptotically exact. For applications to lattice field theory in particular, success has been demonstrated in proof-of-principle studies of scalar theories, gauge theories, and thermodynamic systems. This work develops approaches which enable flow-based sampling of theories with fermionic degrees of freedom, as is necessary for the technique to be applied to lattice field theory studies of the Standard Model of particle physics, and of many condensed matter systems. The method is demonstrated on Yukawa theory in 1+1 dimensions.

Primary authors: ALBERGO, Michael (New York University); KANWAR, Gurtej (MIT); URBAN, Julian (Heidelberg University); Dr REZENDE, Danilo Jimenez (DeepMind); Dr RACANIÈRE, Sébastien (DeepMind); Prof. SHANAHAN, Phiala (Massachusetts Institute of Technology); Dr HACKETT, Daniel (MIT); BOYDA, Denis (ANL, MIT); CRANMER, Kyle Stuart (New York University (US))

Presenter: ALBERGO, Michael (New York University)

Session Classification: Algorithms (including Machine Learning, Quantum Computing, Tensor Networks)

Track Classification: Algorithms (including Machine Learning, Quantum Computing, Tensor Networks)