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## Simulating Correlated Electrons with Symmetry-Enforced Normalizing Flows

*Wednesday 5 November 2025 09:20 (20 minutes)*

We demonstrate, for the first time, that normalizing flows can accurately learn the Boltzmann distribution of the fermionic Hubbard model—a central framework for understanding the electronic structure of graphene and related materials. Conventional approaches such as Hybrid Monte Carlo often encounter ergodicity breakdowns near the time-continuum limit, introducing systematic biases. By incorporating symmetry-aware architectures and enabling independent, identically distributed sampling, our method overcomes these limitations and delivers substantial performance gains over state-of-the-art techniques.

### Parallel Session (for talks only)

Algorithms and artificial intelligence

**Authors:** SCHUH, Dominic (University of Bonn); BERKOWITZ, Evan (Forschungszentrum Jülich); KREIT, Janik (University of Bonn); NICOLI, Kim A.; FUNCKE, Lena (University of Bonn); RODEKAMP, Marcel (Universität Regensburg); LUU, Thomas (Forschungszentrum Jülich)

**Presenter:** SCHUH, Dominic (University of Bonn)

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