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Neural quantum states for lattice field theory

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The study and impact of lattice gauge theories on high-energy physics cannot be understated. However, the difficulties involved in simulating strongly-coupled systems has hampered our attempts to fully understand phenomena like quark confinement and hadronisation. We present an application of state-of-the-art machine learning techniques under the umbrella of neural quantum states to high-energy physics. Notably, the ansatze for this work combines physically motivated Jastrow terms with non-trivial equivariance under gauge transformations. Using this, we will present accurate determinations of ground state properties of the non-Abelian SU(2) lattice field theory across a range of inverse couplings.

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Short summary

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