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Nonlocal, yet translation invariant, constraints for rotationally invariant slave bosons THOMAS AYRAL, GABRIEL KOTLIAR, Department of Physics and Astronomy, Rutgers University, Piscataway, NJ 08854 — The rotationally-invariant slave boson (RISB) method [1] is a lightweight framework allowing to study the low-energy properties of complex multiorbital problems [2] currently out of the reach of more comprehensive, yet more computationally demanding methods such as dynamical mean field theory.
In the original formulation of this formalism, the slave-boson constraints can be made nonlocal by enlarging the unit cell and viewing the quantum states enclosed in this new unit cell as molecular levels.
In this work, we extend RISB to constraints which are nonlocal while preserving translation invariance. We apply this extension to the Hubbard model.

[1]Lechermann et al., Phys. Rev. B 76, 155102
[2]Lanatà et al., Phys. Rev. B 85, 035133, Lanatà et al., Phys. Rev. X 5, 11008, Lanatà et al., arXiv 1606.09614

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