

Implementation of LatticeQED problem:

- 1. most general case: quantum link model (with gauge fields) in d dimensions (limit to 1 or 2 dimensions first)
- 2. as special cases:
 - Wilson and staggered fermions
 - in 1D: possibility to eliminate gauge fields
- 3. start with Wilson Hamiltonian in 1D and 2D + QLM for gauge fields
- 4. need to enforce Gauss' law: e.g., as an additional Hamiltonian term
- 5. User should have the following options to specify:
 - lattice (includes: dim, lattice_constant, num_sites)
 - fermion_rep (Wilson or staggered)
 - physical_params (mass, coupling, etc.)
 - whether to add Gauss' operator to Hamiltonian (energy penalty) or return as a separate operator
 - for fermion_rep == 'wilson': representation of gamma-matrices
 - for dim == 1: whether to eliminate gauge fields
- 6. combinations of operators:
 - FermionOp * FermionOp
 - FermioOp * SpinOp * FermionOp
 - SpinOp * SpinOp
- 7. introduce new operator.second_quantization.mixed_op
 - mixing/composition is always as a tensor product since different types of operators must act on distinct Hilber spaces
 - MixedOp = List[FermionicOp, SpinOp, FermionicOp]
 - need to specify WHICH qubits each op acts on? Allow for cases where two FermionicOps act on different registers?
 - can this be made compatible with the current implementation of mappers?
- 8. return list of operators as
 - List[MixedOp(FermionOp, FermionOp), MixedOp(FermionOp, SpinOp, FermionOp), ...], each element is term in operator

