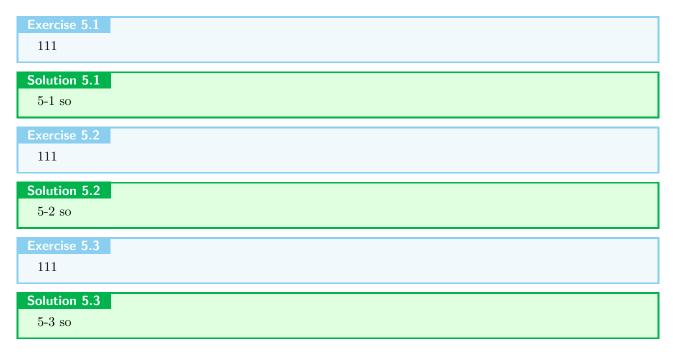
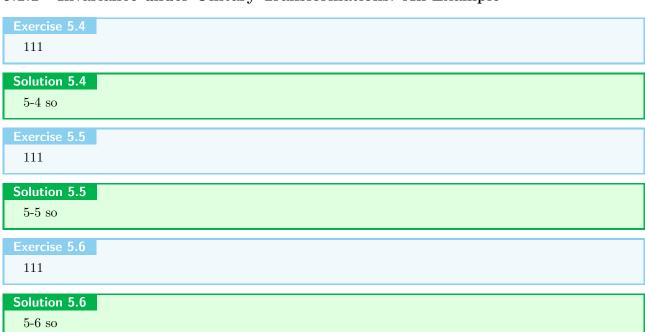
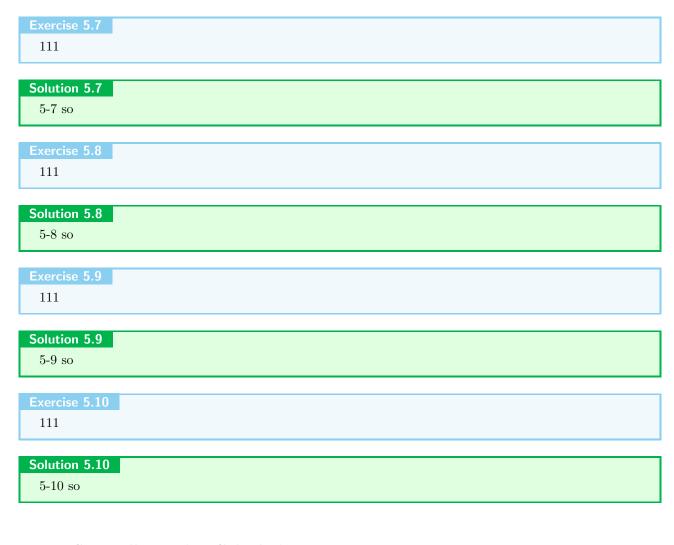
## 5.1 The Independent Electron Pair Approximation (IEPA)



## 5.1.1 Invariance under Unitary Transformations: An Example





- 5.1.2 Some Illustrative Calculations
- 5.2 Coupled-Pair Theories
- 5.2.1 The Coupled Cluster Approximation (CCA)
- 5.2.2 The Cluster Expansion of the Wave Function

```
Exercise 5.11
111

Solution 5.11
5-11 so
```

5.2.3 Linear CCA and the Coupled Electron Pair Approximation (CEPA)

```
Solution 5.12
5-12 so
```

## 5.2.4 Some Illustrative Calculations

111

## 5.3 Many-Electron Theories with Single Particle Hamiltonians

111 Solution 5.13 5-13 so The Relaxation Energy via CI, IEPA, CEPA, and CCA 5.3.1111 Solution 5.14 5-14 so111 Solution 5.15 5-15 so The Resonance Energy of Polyenes in Hückel Theory 5.3.2111 Solution 5.16 5-16 so111 Solution 5.17 5-17 so 111 Solution 5.18 5-18 soExercise 5.19 111 Solution 5.19 5-19 so