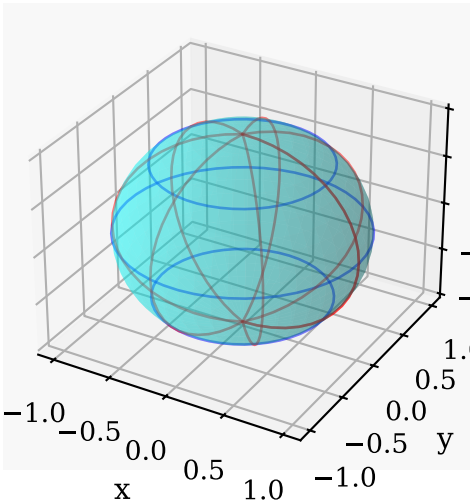
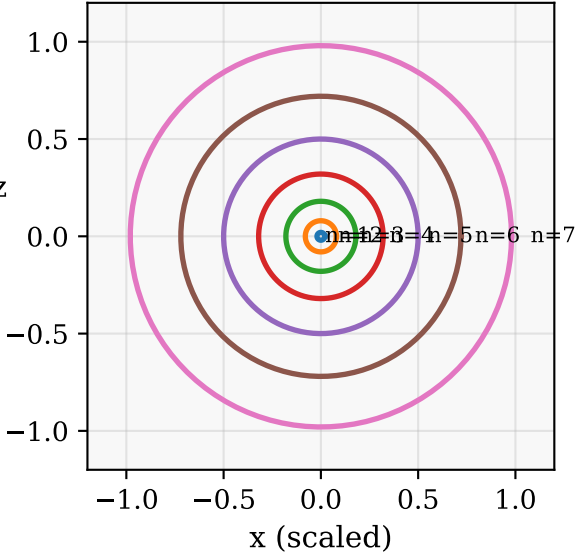


Spatial Structure, Matter, and Energy

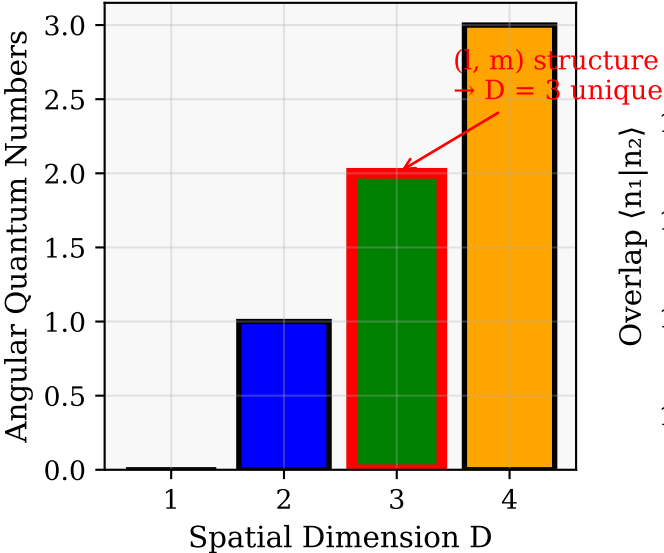
3D from Angular (l, m)  
Spherical Coordinates



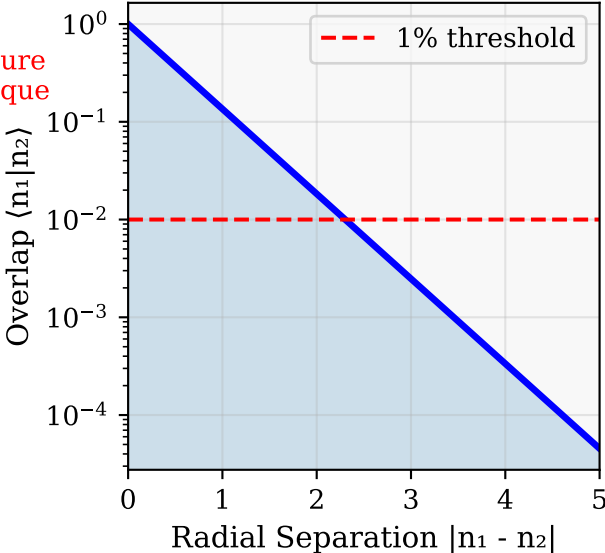
Radial Extension  
 $r \propto n^2$  (Bohr scaling)



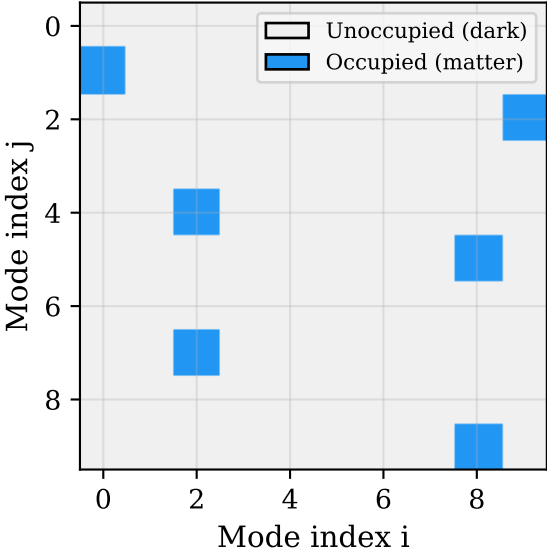
Dimensionality from  
Partition Constraints



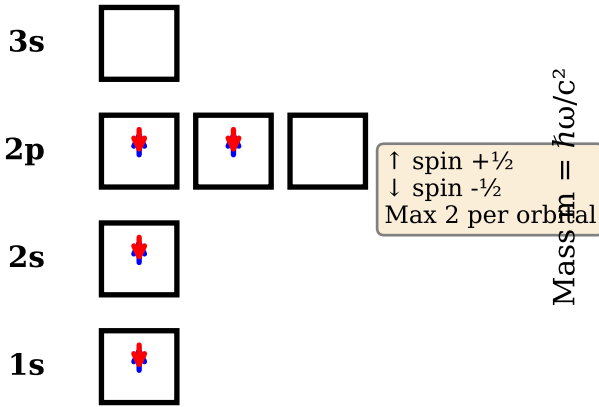
Locality Principle  
(Exponential decay)



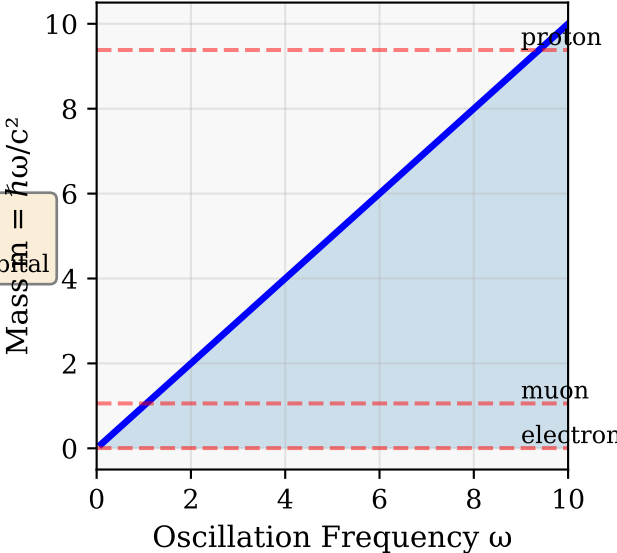
Mode Occupation  
6/100 occupied (5%)



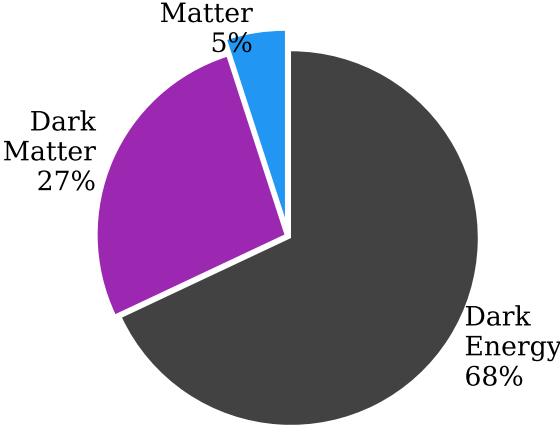
Exclusion Principle  
(Coordinate Uniqueness)



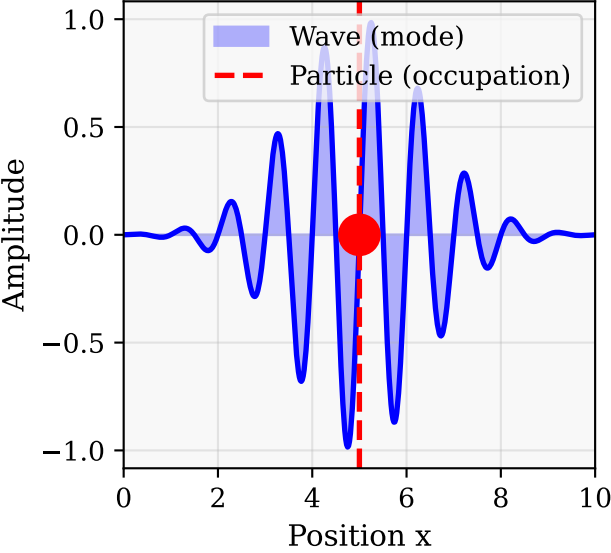
Mass-Frequency Identity  
 $m = \hbar\omega/c^2$



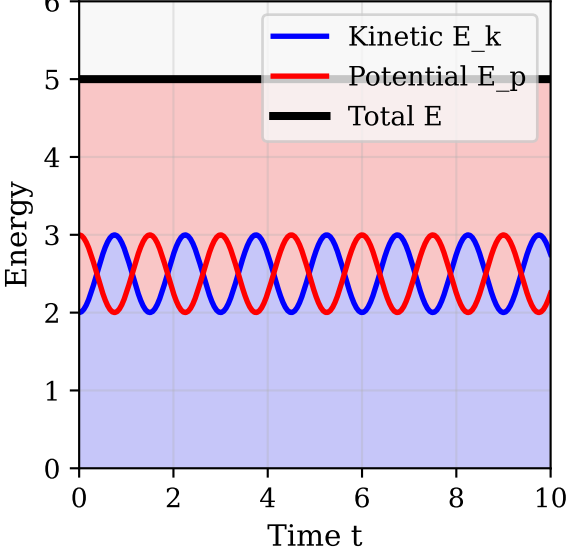
Cosmic Mode Occupation  
(Occupied vs Unoccupied)



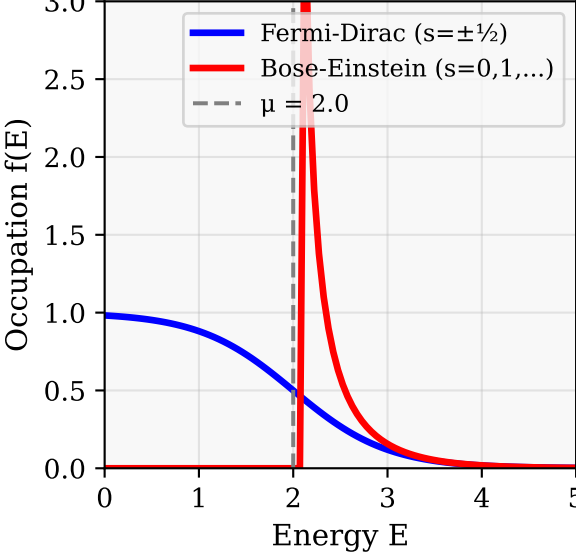
Wave-Particle Duality  
(Mode vs Occupation)



Energy Conservation  
 $dE/dt = 0$



Mode Occupation Statistics  
(Fermions vs Bosons)



Vacuum Energy  
(Unoccupied Mode Contribution)

