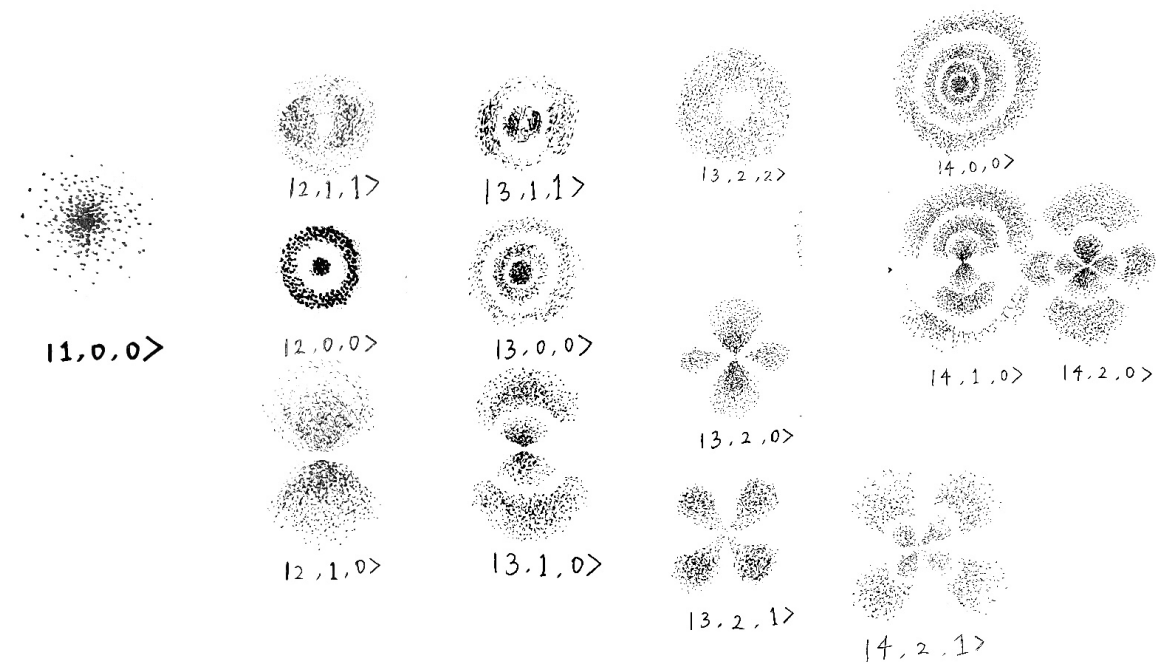


Quantum of Light



Hydrogen atom wavefunctions

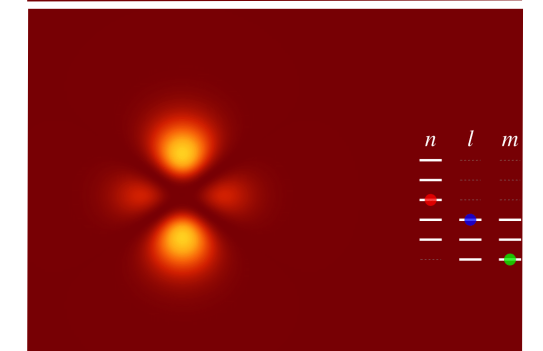
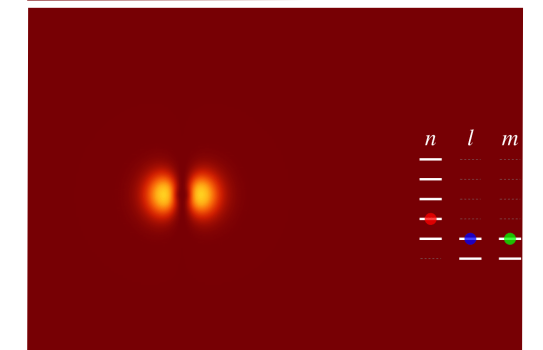
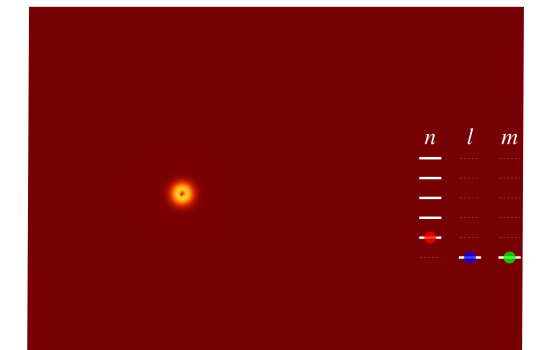
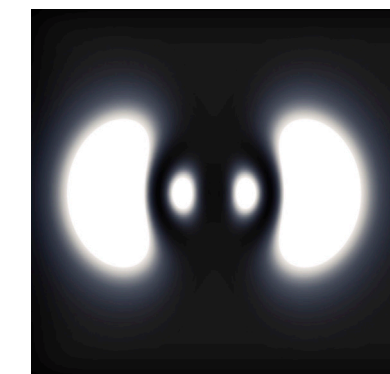
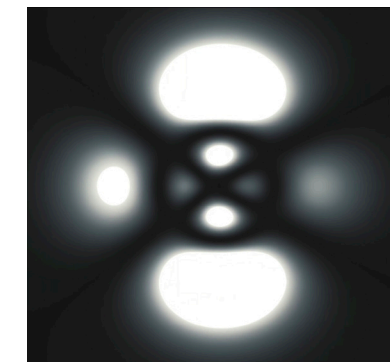
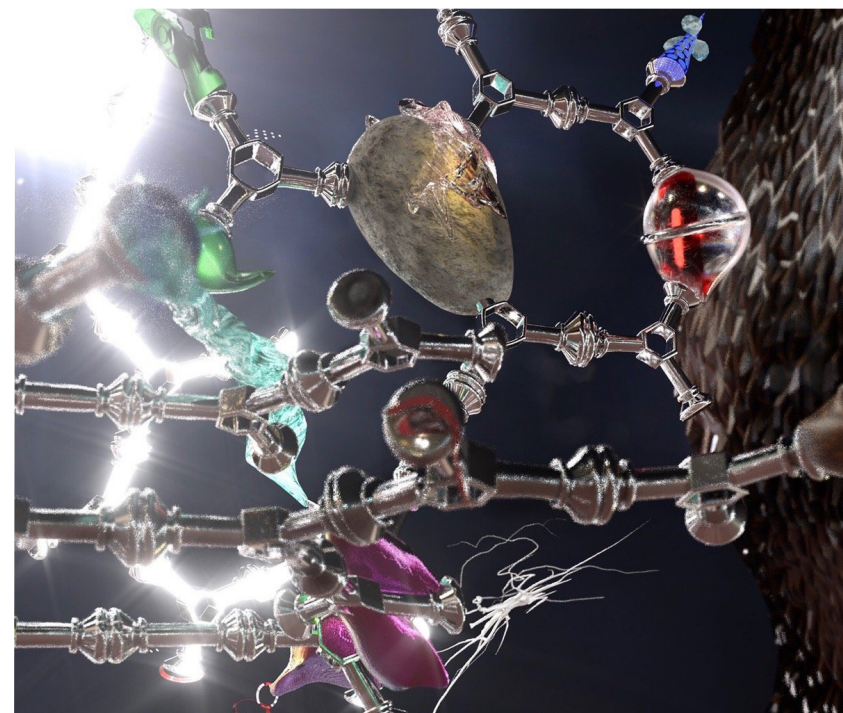
$$\psi (r , \theta , \phi)$$

The first element - hydrogen atom has only one electron moves around the nucleus. Draw the electron cloud of the hydrogen atom, the probability of distribution in space of the electrons corresponding to each set of quantum numbers (n,l,m) around the nuclear.

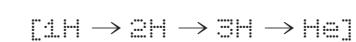
l=0, electron cloud is spherically symmetrical

l=1, electron cloud is dumbbell-shaped

l=2, electron cloud is quadruple petal



Every time I think of the sun, the sun is fusing hydrogen atoms in its core at this moment, as if the first element was born in the primordial. Protons collide freely and fly apart, one of the protons eventually decay to a neutron in the collision and bond with another in the nucleus and stabilized. Electrons are attracted and moves freely around the nucleus.



In the core of the sun, hydrogen atoms in close proximity to the sun's fiery core and extreme gravity, overcome the electrical repulsion and nuclei barrier, breakthrough become a new element - helium. The fusion release large amount of energy, photons emitting from the core as sunlight. The radiation outward counteracts the gravitational force collapse the sun inward, this balance between gravity and pressure allow the sun to reach a stable equilibrium, where it remains for billions of years.