

國立中央大學八十八學年度碩士班研究生入學試題卷

所別: 太空科學研究所 不分組 科目: 近代物理 共 1 頁 第 1 頁

1. Plot the radial probability density $P(r)$, and the angular probability density $P(\theta, \phi)$ for the three lowest states of hydrogen. (20%)
2. Plot the wavefunction and wavelength of a particle of energy E encountering a barrier of height V_0 and width d , for the cases: (a) $E > V_0$, (b) $E < V_0$. (20%)
3. Explain:
 - (a) Families of particles
 - (b) Periodic table
 - (c) Space quantization(30%)
4. Derive the relativistic formulas:
 - (a) $m = \frac{m_0}{\sqrt{1 - \frac{v^2}{c^2}}}$
 - (b) $E^2 = p^2 c^2 + m_0^2 c^4$(30%)

參考用