

國立中央大學八十六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

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1. Make plots of relativistic energy versus speed of a particle.
(15%)
2. Derive Compton scattering formula. (25%)
3. An electron is confined in an infinitely deep potential well of width a .
 - (a) Find the complete wave function for $0 \leq x \leq a$.
 - (b) Find the average value of x .
 - (c) Find the average value of momentum of this electron.
 - (d) Find the permitted energy levels of this electron.(40%)
4. Explain:
 - (a) properties of atoms,
 - (b) properties of elements,
 - (c) properties of four basic forces.
 - (d) photoelectric effect.(20%)