A WKB-Type Approximation to the Schrödinger Equation

Rene Czepluch *, Rasmus Klitgaard †, Laurits N. Stokholm ‡
Department of physics

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1 Indledning

2 Solution to the stationary Schrödinger Equation

Hvis vi antager, at vi betragter en partikel i en dimension, x, er Schrödinger ligningen

$$\frac{\hbar^2}{2m}\frac{\partial^2\psi}{\partial x^2} + V(x)\psi = E\psi \tag{1}$$

isoleres $\frac{\partial^2\psi}{\partial x^2}$ i ligning (1), får vi

$$\frac{\partial^2\psi}{\partial x^2} = 2m\psi(E - V(x))\frac{1}{\hbar^2} \tag{2}$$

defineres

$$P(x) \equiv \sqrt{2m(E - V(x))} \tag{3}$$

Kan ligning (2) omskrives til

$$\frac{\partial^2\psi}{\partial x^2} = -\frac{P^2}{\hbar^2}\psi \tag{4}$$

3 kvantisering

4 The hydrogen atom

5 Tunnelering

6 Ionisation af et Rydberg-atom

7 konklusion

*rene.czepluch@post.au.dk
†rasmusklitgaard97@gmail.com
‡laurits.stokholm@post.au.dk