

MPF1204, FISIKA KUANTUM (3 SKS)
Program Studi S2 Pendidikan Fisika



FAKULTAS KEGURUAN DAN ILMU
PENDIDIKAN
UNIVERSITAS SEBELAS MARET (UNS)
SURAKARTA

Homework e Learning :

THE GENERAL STRUCTURE OF WAVE MECHANICS

Pertemuan ke-9 : Juma't, 24 April 2020 Pk. 14.15 – 15.10 wib

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Exercises/Homework (at a paper), THE GENERAL STRUCTURE OF WAVE MECHANICS



Exercises/homework:

1. Use the commutation relations between the operators x and p to obtain the equations describing the time dependence of $\langle x \rangle$ and $\langle p \rangle$ for the Hamiltonian given by

$$H = \frac{p^2}{2m} + \frac{1}{2} m(\omega_1^2 x^2 + \omega_2 x + C)$$

Solve the equations of motion you obtained in Problem ●. Write your solutions in terms of $\langle x \rangle_0$ and $\langle p \rangle_0$, the expectation values at time $t = 0$.

2. An electron in an oscillating electric field is described by the Hamiltonian operator

$$H = \frac{p^2}{2m} - (eE_0 \cos \omega t)x$$

Calculate expressions for the time dependence of $\langle x \rangle$, $\langle p \rangle$, and $\langle H \rangle$.

Solve the equations of motion you obtained in Problem ●. Write your solutions in terms of $\langle x \rangle_0$ and $\langle p \rangle_0$, the expectation values at time $t = 0$.



Thank you
