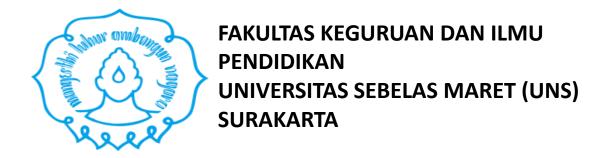
#### MPF1204, FISIKA KUANTUM (3 SKS)

Program Studi S2 Pendidikan Fisika



### Homework e Learning:

# THE GENERAL STRUCTURE OF WAVE MECHANICS

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

DR. Suharno, M.Si

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



#### **Exercises/homework:**

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.

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

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

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