

Assignment 2

To be submitted on May 3, 2010 (note new deadline)

(a) Work out the commutator

$$[\hat{\mathcal{H}}_R, \hat{\mathbf{E}}_T(\mathbf{r}, t)],$$

with the operators as defined in Sec. 4.4.

(b) Compute the time derivative

$$\frac{\partial}{\partial t} \hat{\mathbf{E}}_T(\mathbf{r}, t).$$

(c) Do (a) and (b), with the magnetic field operator instead of the transverse electric field operator. Comment on any pattern you can see.

The solution should be submitted to Emil Lundh (lundh@tp.umu.se) no later than May 3, 15:00. If the solution is submitted electronically, I will only accept platform independent formats (pdf strongly recommended!). Answers on paper are of course also accepted.