

## AST4210 — Radiation I

### Exercises — week 37

A non-relativistic electron moving with velocity  $\mathbf{v}_0$  is acted on by the plane-polarized plane wave

$$\mathbf{E}(\mathbf{r}, t) = \mathbf{E}_0 \cos(\mathbf{k}_0 \cdot \mathbf{r} - \omega_0 t).$$

Determine the frequency  $\omega$  of the scattered radiation seen by an observer positioned in direction  $\hat{\mathbf{n}}$  from the electron.