

## Introduction to String Theory exercises - sheet 0

### Exercise 1

Find the Lagrangian for a single particle of charge  $e$  and mass  $m$  moving in a flat space filled with a background electromagnetic field. Explain why the answer is correct by deriving the equation of motion. Hint: use the vector potential  $A^\mu$ .

### Exercise 2

The Polyakov action enjoys global Poincare symmetry. Derive the corresponding conserved currents. (Equation 2.66 and 2.67 in Blumenhagen / Lüst / Theisen)