

Problem Set 2 (Due Sep 12)

1. Gauge invariance QED

(a) Problem 63.1 Srednicki (All number refer to online book version <http://web.physics.ucsb.edu/~ma>)

2. Gauge invariance QED

(a) Problem 67.2 Srednicki

3. Gauge invariance QED

(a) Problem 68.1 Srednicki

4. **Infrared singularities** Consider the scattering process $ee^- \rightarrow ee^-$ (the arrows on the left fermion lines should be flipped).

Figure 1: Feynman Diagrams



(a) Are the diagram UV divergent?

(b) Are the diagram IR divergent?