Problem 13

Consider the case of electron-positron annihilation into quark-antiquark pairs as discussed in class on 3/7.

a) Use the trace theorems to determine in detail the results for the spin-averaged square of the invariant amplitudes.

b) Perform the steps that give the differential cross section in the CM frame using the variables $E$ and $\theta$ that represent the initial electron energy and the scattering angle, respectively.

c) Obtain the total cross section by integrating over $\theta$ and $\phi$.

Problem 14

Determine a topic for your paper and presentation. Submit a brief outline on a separate sheet. Don’t hesitate to contact us about material and a possible topic.