

## Topic 11 – Solutions to Dirac Equation, Helicity and Weyl Spinors

### Pre-Lecture Reading/Post-Lecture Summary

We will look at solutions to the Dirac equation. This will not only provide some insight into the unique aspects of spin in the relativistic setting, but will also serve as an important ingredient in calculations that we will perform later in the course using Feynman diagrams. We will particularly focus on the discontinuous behavior of solutions in the massless limit. We will find the notion of helicity to be a better characterization of spin states than the usual z-component. We will also examine the Dirac equation in the massless case and introduce Weyl (or chiral) spinors. This will finally reveal the secret role of the fifth gamma matrix. Then you will leave and be happy.