

28. Addition of Angular Momenta

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Many of the applications of quantum mechanical spin involve two (or more) spins at once. We therefore need to understand what's called "addition of angular momenta," which is covered in Subsection 4.4.3 in Griffiths. The basic question is this: In a system with two types of angular momenta (e.g., the spins of two different particles), what are the possible values of the total angular momentum—both its z component and its magnitude? Also, how are the eigenstates of the *system's* angular momentum related to the angular momentum eigenstates of the *individual* particles?

As you'll see, Griffiths carefully works out the case of two spin-1/2 particles. This is really important material, so be sure that you understand every notation, every interpretation, and every logical step. Griffiths then provides a table, with tiny print, in which you can look up the answers for a variety of other two-component systems with reasonably low l or s values. Please think about how you would work out some of the other entries in the table.