

1.6: Looking Ahead

Let's reflect on what we have done in the course up to this point. Our focus has been on developing an energy model, which we have called the *Energy-Interaction Model*, and on understanding how to apply it to some particular thermal phenomena. We have used this model to begin to understand some of the more general thermal properties of matter. We will continue to develop the *Energy-Interaction Model* as we apply it to new kinds of phenomena in Chapter 2.

The next step is to add additional types of energies to our repertoire, so we can handle other types of phenomena with different kinds of interactions. Fortunately, there are not that many different energies. So, after we have added just a few more, we will be in a position to tackle questions about many more phenomena than we could even deal with in one quarter. But that is precisely the power of this approach. It is so universal that you do not need to be shown how to use it for each different phenomenon. Once you are comfortable with the approach, it becomes your own powerful tool, which you can use anytime you need it.

What have we left out in what we have done so far? Think back over all of the phenomena we have discussed and the questions we can answer with this approach. Basically, we can get at the values of quantities, or more precisely the changes in these values that occur as a result of the interaction, but we cannot get information about the details of the interaction or what goes on during the interaction.

When we want to know something about the details of an interaction or the dynamics of the phenomenon, we will need to use an approach, or model, that incorporates these details. But precisely because we have to incorporate more detail, the models will not be nearly so general as the *Energy-Interaction Model*. In Physics 7B we will devote considerable effort to understanding the Newtonian model, which allows us to very accurately calculate motions of objects. In Physics 7C we focus on a very useful wave model of motion and field models that allow us to make sense of electric and magnetic phenomena. We need these detailed models because we want to be able to answer questions that the Energy-Interaction model can't help us with. But, alas, we will miss the simplicity and generality of the energy model.

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