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## **Modeling Physical Systems Using Bond Graphs**

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Modeling is just another word for understanding. In order to truly understand how a physical system works, we need to collect knowledge about the system under study and organize that knowledge in a meaningful way. This is called modeling.

In this lecture, a methodology shall be introduced that allows us to capture and organize knowledge about physical systems in a systematic way. To this end, we shall use bond graphs, a graphical technique for representing power flows through a physical system.

Energy storage and power flows are central to understanding how physical systems operate. These concepts are common to all physical systems, irrespective of their domain: electrical circuits, mechanical systems, thermal systems.

Bond graphs allow us to treat all of these systems in a uniform and systematic manner. Thereby, less errors are made when formulating models of physical systems.