A Mechanical Simulator of Cascading Failure in Power Grids

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Abstract

The large North American blackout on August 14, 2003 illustrates the need for research and tools that facilitate understanding of cascading failures in electric power systems. Motivated by this need, this talk will describe preliminary efforts to design and test a mechanical simulator of cascading failure in power grids. We anticipate that this simulator will improve understanding of the mechanisms of cascading failures in power systems, particular in educational contexts. The simulator uses LEGO™ components, such as gears, motors, rods, building blocks and others, to represent generators, transmission lines, and system loads. With the help of LEGO™ sensors and a computer we will monitor, record and visualize, cascading failure sequences for further analysis.