Interactive Lecture Demonstrations

Prediction Sheet**—Current in Series and Parallel Circuits**

**Directions:**  This is a Prediction Sheet where you will enter your predictions and answers. Write your name at the top to record your presence and participation in these demonstrations.  For each demonstration below, write your prediction on this sheet before making any observations. You may be asked to send this sheet to your instructor.

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| **Demonstration 1:** In the *top* circuit on the right, bulb A is connected to a perfect battery (with no internal resistance). In the *bottom* circuit, Bulb B (which is identical to Bulb A) is added in series with bulb A, as shown.  Compare the brightness of Bulb A in the *bottom* circuit to the brightness of Bulb A in the *top* circuit. In the *bottom* circuit, compare the brightness of Bulb A to the brightness of Bulb B.  After you have made your predictions, download and view the video [**Series Brightness**](http://pages.uoregon.edu/sokoloff/SeriesBrightness.mp4)**.** |  |
| **Demonstration 2:** Compare the current at points 1 and 2 and in the *bottom* circuit.  After you have made your prediction, view the [graphs](http://pages.uoregon.edu/sokoloff/BottomCurrents12.png) of the measured currents at points 1 and 2 in the bottom circuit as the battery is connected and disconnected. How do they compare? Compare to your prediction and explain your obeservation.  Compare the current through Bulb A in the *top* circuit to the current through Bulb A in the *bottom* circuit.  After you have made your prediction, view the [graphs](http://pages.uoregon.edu/sokoloff/BulbAcurrent.png) of the measured currents through Bulb A in the top circuit and in the bottom circuit as the battery is connected and disconnected. How do they compare? Compare to your prediction and explain your observation.  Compare the current through the battery in the *top* circuit to the current through the battery in the *bottom* circuit.  After you have made your prediction, view the [graphs](http://pages.uoregon.edu/sokoloff/BatteryCurrent.png) of the measured currents through the battery in the top circuit and in the bottom circuit as the battery is connected and disconnected. How do they compare? Compare to your prediction and explain your observation. | |
| **Demonstration 3:** In the *top* circuit on the right, Bulb A is connected to a perfect battery (with no internal resistance). In the *bottom* circuit, Bulb B which is identical to Bulb A is added as shown.  With the switch *open*, compare the brightness of Bulb A in the *top* circuit to the brightness of Bulb A in the *bottom* circuit.  With the switch *closed*, compare the brightness of Bulb A in the bottom circuit to the brightness of Bulb B.  After you have made your prediction, download and view the [video](http://pages.uoregon.edu/sokoloff/ParallelMovie.mp4), and compare the brightness of Bulb A with the switch open (top circuit) and with the switch closed (bottom circuit). Compare to your prediction and explain your observation.  Then compare the brightness of Bulb A in the bottom circuit (switch closed) to the brightness of Bulb B. Compare to your prediction and explain your observation. |  |
| **Demonstration 4:** In the bottom circuit, with the switch *closed*, what do you predict for the current through Bulb B compared to the current through Bulb A.  After you have made your prediction, view the [graphs](http://pages.uoregon.edu/sokoloff/BottomCurrents12.png) of the measured currents through bulbs A and B in the bottom circuit as the switch is opened and closed. How do they compare? Compare to your prediction and explain your observation.  Predict how the current through the battery with the switch *closed* compares to the current through the Battery with the switch *open*.  After you have made your prediction, view the [graph](http://pages.uoregon.edu/sokoloff/BatteryCurrent4.png) of the measured current through the Battery in the bottom circuit as the switch is opened and closed. How do they compare? Compare to your prediction and explain your observation.  With the switch *closed*, predict how the current through the Battery compares to the current through Bulb B.  After you have made your prediction, view the [graphs](http://pages.uoregon.edu/sokoloff/BatteryBulbB.png) of the measured current through the Battery in the bottom circuit as the switch is opened and closed. How do they compare? Compare to your prediction and explain your observation. | |