



a WOW Lab

BLUEPRINT

The Maglev Train

Resources

Periodicals

The following journal article describes a model of a maglev train that uses superconductors and provided the basis for the WOW Lab model:

Yang, W. M., L Zhou, Feng Yong, et al. "A small Maglev car model using YBCO bulk superconductors." *Superconductor Science and Technology* 19, (2006): 537–539.

Websites

This website provides information about superconductors and their various applications:

Eck, Joe. "Superconductor Information for the Beginning." *Superconductors*. 1999. Accessed 14 July 2011. <http://www.superconductors.org>

The Meissner effect is explained in the following website:

"Meissner Effect." *Colorado Superconductor*. Modified 21 March 2001. Accessed 14 July 2011. http://www.users.qwest.net/~csconductor/Experiment_Guide/Meissner%20Effect.htm

This website provides instructions for a student activity that uses magnetic repulsion to create levitation, which can be used as a possible extension activity to show how the train levitates:

"Windows to the Universe Magnetic Levitation." *University Corporation for Atmospheric Research*. Modified 16 March 2005. Accessed 14 July 2011. http://www.windows2universe.org/teacher_resources/magnetism/teach_magnet_levitate.html

This links to NASA's IMAGE satellite tutorial on the Earth's magnetic field, which provides classroom activities and tutorials:

Odenwald, Sten. "Earth's Magnetic Field." *National Aeronautics and Space Administration*. Modified 25 March 2003. Accessed 14 July 2011. <http://image.gsfc.nasa.gov/poetry/magnetism/magnetism.html>

A superconductivity undergraduate physics laboratory at MIT, which describes superconductivity and the Meissner effect, may be accessed by clicking on PDF lab guide in the following link:

"Superconductivity" *Massachusetts Institute of Technology*. 2005. Accessed 14 July 2011. <http://dspace.mit.edu/bitstream/handle/1721.1/36390/8-13Fall-2002/OcwWeb/Physics/8-13Experimental-Physics-I---II--Junior-Lab-Fall2002/Labs/detail/lab20.htm>