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**Making a MAD Experiment Seem Rational.** Michael R. Sawaya, UCLA-DOE Laboratory of Structural Biology & Molecular Medicine, Box 951570 UCLA, Los Angeles, CA 90095-1570.

Multiwavelength anomalous dispersion (MAD), now a commonly used method of phase determination in protein crystallography, might seem like an arcane topic to students of an introductory crystallography course. However, some concepts, such as the absorption of X-rays by an anomalous scatterer, can be related to more familiar concepts covered by introductory chemistry courses (e.g. the Lyman and Balmer line spectra emitted by the hydrogen atom). Other concepts, such as the 90 degree phase delay of an absorbed and re-emitted photon, have an analogy in the familiar observation of a child on a swing. More challenging concepts, such as the effect of changing the wavelength in a MAD experiment, can be illustrated in an Argand diagram with the help of powerpoint slides. From these illustrations, it becomes apparent why the peak, remote, and inflection wavelengths provide the best source of phase information.