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Magnetism of $\{\text{Cr}_{10}\text{Cu}_2\}$: A story of the interplay between experiment and theory LARRY ENGELHARDT, Francis Marion University, Florence, SC — It is a common view that theoretical results are irrelevant without experimentation and experimental results cannot be understood without theories. However, it is often the case that research in physics falls strictly under the heading of “theory” or “experiment” with limited communication between the two. Our recent analysis of a particular magnetic molecule, $\{\text{Cr}_{10}\text{Cu}_2\}$, provides a striking example to the contrary: X-ray diffraction measurements allowed us to formulate a general theoretical model; magnetic susceptibility measurements were used to refine the model; the model provided low temperature predictions; these predictions were verified experimentally; certain features of these measurements provided additional new insights about the theory; in turn, the theory gave a better understanding of the experimental technique itself; and this led to additional predictions for future experiments. (Background information about each of the quantities that have been measured and/or calculated will be provided.)

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