

Abstract Submitted  
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**On the tensorial nature of chirality** EFI EFRATI, WILLIAM IRVINE,  
University of Chicago — Chirality occupies a central role in fields ranging from biological self assembly to the design of optical meta-materials. The definition of chirality, as given by lord Kelvin in 1893, associates handedness with the lack of mirror symmetry. However, the quantification of chirality based on this definition has proven to be an elusive task. The difficulty in quantifying chirality is contrasted by the ease with which one determines the handedness of objects with a well defined axis such as screws and helices. In this talk I will present table-top demonstrations that show that a single object can simultaneously be left handed and right handed when considered from different directions. The orientation dependence of handedness motivates a tensorial quantification of chirality relating directions to rotations. I will give an explicit example of such a tensorial measure of chirality for embedded surfaces, and show how the tensorial nature of chirality can be probed in experiments and exploited as a design principle.

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