Edge States and the Valley Hall Effect

Michael I. Weinstein

Department of Applied Physics and Applied Mathematics, and Department of Mathematics
Columbia University
New York, NY 10027

Abstract: I will discuss waves in perturbed honeycomb media with line–defects. In particular, I’ll present recent work with Alexis Drouot [1] which clarifies the role in edge state formation played by the type of symmetry–breaking and the orientation of the line–defect. Our results provide a rigorous explanation of numerical observations in [2,3]; see also the photonic experimental study in [4]. We also discuss implications for the Valley Hall Effect, which concerns quantum Hall–like energy transport in honeycomb structures.

References