**Chiral edge fluctuations of colloidal membranes** LEROY JIA, Brown University, MARK ZAKHARY, ZVONIMIR DOGIC, Brandeis University, ROBERT PELCOVITS, THOMAS POWERS, Brown University — Using experiments and theory we study chiral fluctuations of the edge of a nearly flat colloidal membrane, consisting of rod-like viruses held together by the depletion interaction. Our measurements show an anomalous peak in the power spectrum around 1 inverse micron. Using an effective theory to describe the liquid crystal degrees of freedom by geometric properties of the edge, such as length, geodesic torsion, and curvature, we calculate the spectrum of out-of-plane edge fluctuations. The peak arises for sufficiently strong chirality, and corresponds to the instability of a flat membrane to a shape with helical, rippled edges.

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