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Regularizing rigidifying curves to understand the low-energy deformations of thin shells SALEM AL MOSLEH, CHRISTIAN SANTANGELO, Univ of Mass - Amherst, GEOMETRY OF MATERIALS TEAM — It is much harder to stretch a piece of paper than bend it. We exploit this fact to simplify the elastic energy of a thin shell. We accomplish this by extending the linear isometric displacements, displacements that do not cause stretching to lowest order, to low energy Nambu-Goldstone modes. This approach fails in an interesting way in the vicinity of "rigidifying curves," curves with zero normal curvature, because half of the linear isometries are divergent there. We use a renormalization group methods to show that nonlinearities in the strain regularize these divergences. We explore the relationship between these modes and folding along curves of zero normal curvature.

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