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Emily B Dryden* (emily.dryden@bucknell.edu), Department of Mathematics, Bucknell University, Lewisburg, PA 17837, and **Victor Guillemin** and **Rosa Sena-Dias**. *Building Polygons from Spectral Data*.

Given certain geometric data, how many convex polygons can you build with that data? We consider this question when the data includes the number of edges, the set of normal vectors to the edges, and the sums of the lengths of the edges with a given normal vector. By making a few assumptions, we show that the answer can be made much smaller than one might initially guess. We'll mention applications of this result to the problem of whether symplectic toric manifolds and orbifolds are determined by data arising from the spectrum of the Laplace operator. (Received September 21, 2011)