Spectral invariants of integrable polygons

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An integrable polygon is one whose interior angles are of the form π/n for positive integers n. As an exercise, can you determine all integrable polygons? I'll discuss joint work with Gustav Mårdby in which we obtain new spectral invariants for these polygons. It turns out that integrable polygons are also precisely those polygons which strictly tessellate the plane. I will also discuss joint work with M. Blom, H. Nordell, O. Thim, and J. Vahnberg in which we explore the generalization of integrable polygons to higher dimensions. This includes an equivalence between the geometric characterization of strict tessellation, an analytic characterization of Dirichlet Laplace eigenfunctions, and an algebraic characterization of crystallographic Coxeter groups.