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**Aaron Abrams** and **Richard Kenyon\***, 151 Thayer St, Providence, RI 02912. *Area-one  
rectangulations*. Preliminary report.

We study the (rational) map from conductances to edge energies in a finite resistor network. We show that, for the simplest boundary conditions consisting of a potential drop across two vertices, the map is surjective, and of degree equal to the number of acyclic orientations with a unique source and sink at the relevant boundary points.

As an application we show that any planar graph can be realized as a rectangle tiling with equal area rectangles. (Received September 05, 2014)