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Carla Farsi and **Elizabeth Gillaspy***, elizabeth.gillaspy@colorado.edu, and **Sooran Kang** and **Judith A. Packer**. *Wavelets, KMS states, and separable representations for higher-rank graphs.*

Higher-rank graphs are a generalization of directed graphs, which were introduced by Kumjian and Pask as a model for C^* -algebras. Higher-rank graphs make it easy to visualize many structural properties of the associated C^* -algebras.

Building on work by Marcolli and Paolucci, we construct a new type of representation of a higher-rank graph Λ . These representations give rise not only to separable representations of the associated C^* -algebra $C^*(\Lambda)$, but also to KMS states and to a wavelet decomposition of $L^2(\Lambda)$. We will end by describing how to apply this wavelet decomposition to traffic analysis on networks. (Received September 22, 2015)