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**Patrick McDonald\*** (mcdonald@ncf.edu), Department of Mathematics, New College of Florida, 5700 N. Tamiami Trail, Sarasota, FL 34243, and **Paul Loya**. *The eta invariant for quantum graphs.*

Let  $\Gamma$  be a compact quantum graph with natural coordinate  $x$  associated to each edge. Let  $D$  be the Dirac operator defined initially on functions smooth along the edges of  $\Gamma$  via differentiation with respect to the natural coordinate. We parameterize self-adjoint extensions of  $D$  using a collection of unitary matrices determined by the structure of  $\Gamma$ . We compute the eta invariant associated to a self-adjoint extension of  $D$  in terms of the unitary matrix representing the given extension. (Received February 07, 2006)