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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 Γ 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 Γ 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 Γ . 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)