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Toeplitz operators and the eta invariant: the case of S^1.

Index theory of elliptic operators, foliations, and operator algebras (*New Orleans, LA/Indianapolis, IN*, 1986), 11–41, *Contemp. Math.*, 70, *Amer. Math. Soc., Providence, RI*, 1988.
58G12 (19K56 46L80 47B35 57R32)

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References: 0 **Reference Citations: 2** **Review Citations: 1**

The authors relate the relative index theorem for flat bundles [M. F. Atiyah, V. K. Patodi and I. M. Singer, Math. Proc. Cambridge Philos. Soc. **78** (1975), no. 3, 403–432; MR **53** #16556] to the index theorem for operators elliptic along the leaves of a foliation [A. Connes, in *Operator algebras and applications, Part 1* (Kingston, ON, 1980), 521–628, Proc. Sympos. Pure Math. 38, Amer. Math. Soc., Providence, RI, 1982; MR 84m:58140]. The foliated manifold that is considered is the total space of a flat principal bundle. This manifold is equipped with two transverse foliations, and an elliptic operator on the base space can be lifted to an operator longitudinally elliptic relative to one foliation, transversally elliptic relative to the other. The proof proceeds by comparing cyclic cocycles associated to these two situations. As essential part is played by the concept of "renormalization" of a cyclic cocycle from a foliation to the algebra of functions on the total space.

The paper treats in detail only the case of flat S^1-bundles over S^1. An account of the general case is in preparation.

{For the entire collection see 89a:46003}

Reviewed by *John Roe*