962-20-955 **Reva S Kasman*** (`rkasman@math.uic.edu`), Department of MSCS (M/C 249), University of Illinois at Chicago, 851 S. Morgan Street, Chicago, IL 60607. *Norms, Folding and the Bieri-Neumann-Strebel Invariant.* Preliminary report.

Given a homomorphism χ from a finitely generated group G to $\mathbb{Z}$, there is a finite sequence of Stallings folds on the Cayley graph of G which produces a G-tree. This tree gives a criterion for determining whether the homomorphism χ is contained in the Bieri-Neumann-Strebel invariant of G. The folding procedure can be generalized to free co-compact actions of G on higher dimensional complexes. The BNS invariant is a group theoretic generalization of W.P. Thurston's norm on $H^1(M; R)$ for compact, oriented 3-manifolds M. We can define a similar norm on $H^1(G; R)$ which may be useful in determining a structure of the invariant for some classes of groups G. In particular, this would show that the BNS invariant of such groups is a union of open faces of a rational polyhedron. (Received September 29, 2000)