1023-55-40   **Samuel B. Smith*** (`smith@sju.edu`), Department of Mathematics, Saint Joseph's University, Philadelphia, PA 19131, and **Gregory Lupton**, Department of Mathematics, Cleveland State University, Cleveland, OH 44115. *Rank of the fundamental group of any component of a function space.*

We compute the rank of the fundamental group of any connected component of the space $\mathrm{map}(X, Y)$ for X and Y connected, nilpotent CW complexes of finite type with X finite. For the component corresponding to a general homotopy class $f\colon X \to Y$, we give a formula directly computable from the Sullivan model for f. For the component of the constant map, our formula expresses the rank in terms of classical invariants of X and Y. We apply our formula to prove some general results concerning the classification of the homotopy types of components of a function space as well as to make sample calculations. (Received July 11, 2006)