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Gregory Lupton* (g.lupton@csuohio.edu), Department of Mathematics, Cleveland State University, 2121 Euclid Avenue, Cleveland, OH 44115, and **Samuel Bruce Smith**. *Fibrewise Rational H-Spaces*. Preliminary report.

A *fibrewise H-space* X is a fibrewise-pointed, fibrewise space X that admits a fibrewise multiplication $m: X \times_B X \rightarrow X$. In this fibrewise setting, we assume a given (fixed) projection $p: X \rightarrow B$, and spaces and maps are over B ; the *fibrewise product* is then $P: X \times_B X \rightarrow B$, and the fibrewise multiplication m satisfies $p \circ m = P$. By fibrewise pointed, we mean there is a (fixed, once and for all) section $\sigma: B \rightarrow X$ of $p: X \rightarrow B$. Fibrewise-pointed maps and homotopies are assumed to respect fibrewise basepoints, that is, appropriate sections. Noteworthy examples of fibrewise H-spaces are furnished by considering gauge groups of principal bundles.

We study fibrewise H-spaces from a rational homotopy point of view. In the ordinary (non-fibrewise) setting, rational H-spaces are well understood. Fibrewise H-spaces, even from a rational homotopy point of view, are much less well-understood. We prove a result in the setting of fibrewise H-spaces that is essentially an extension of the well-known Leray-Samelson theorem. We give a formula for the Samelson Lie algebra of the space of sections of a fibrewise H-space. (Received August 27, 2009)