

102. G. W. Whitehead: *On families of continuous vector fields over spheres.*

Let  $f(n)$  be the maximum number of everywhere independent continuous fields of tangent vectors that can exist on the  $n$ -sphere  $S^n$ . It is well known that  $f(2n) = 0$ ,  $f(2n+1) \geq 1$ ,  $f(4n+3) \geq 3$ , and  $f(8n+7) \geq 7$ . It has been proved independently by B. Eckmann (Comment. Math. Helv. vol. 15 (1942) pp. 1-26) and the author (Ann. of Math. vol. 43 (1942) pp. 132-146) that  $f(4n+1) = 1$ . In this paper it is shown that  $f(8n+3) = 3$ . It follows from this and results of N. E. Steenrod (Ann. of Math. vol. 45 (1944) pp. 294-311) that if  $m > k$  and  $k = 2n, 4n+1$ , or  $8n+3$ , with  $n > 0$ , then  $S^m$  is not a  $k$ -sphere bundle over any complex  $B$ . (Received December 10, 1945.)

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### NEW PUBLICATIONS

A collection of papers in memory of Sir William Rowan Hamilton. (Scripta Mathematica Studies, no. 2.) New York, Scripta Mathematica, 1945. 82 pp. \$1.00.

Sequential analysis of statistical data: applications. Prepared by Statistical Research Group, Columbia University, for the Applied Mathematics Panel, National Defense Research Committee, Office of Scientific Research and Development. New York, Columbia University Press, 1945. 315 pp. \$6.25.