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**Approximately multiplicative functionals on algebras of smooth functions.** (English)

Zbl 1064.46032

J. Lond. Math. Soc., II. Ser. 68, No. 3, 739-752 (2003).

Let  $A^*$  be the dual of a commutative Banach algebra  $A$ . For each  $\varphi \in A^*$ , define a bilinear function  $B_\varphi$  by  $B_\varphi(a, b) := \varphi(ab) - \varphi(a)\varphi(b)$  for all  $a, b \in A$ . Then a Banach algebra is an AMNM algebra if for each  $\varepsilon > 0$  there exists  $\delta > 0$  such that for each  $\varphi \in A^*$  with  $\|B_\varphi\| < \delta$  there exists a multiplicative functional  $\psi : A \rightarrow \mathbb{C}$  such that  $\|\varphi - \psi\| < \delta$ . Here the abbreviation AMNM stands for: Approximately Multiplicative functionals are Near Multiplicative functionals. The main result of the paper shows that the Banach algebra  $C^N[0, 1]^M$  of all complex-valued functions defined on  $[0, 1]^M$  with  $N$ th order continuous partial derivatives is an AMNM algebra. Moreover, this result is extended to certain Lipschitz algebras.

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**MSC:**

[46J15](#) Banach algebras of differentiable or analytic functions,  $H^p$ -spaces

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