THEOREM 2. *If $f, g\colon K^{n+1} \to K^{n+1}$ are two continuous mappings such that $f\colon S^n \to S^n$ and $f|S^n$ is essential, then there exists such an $x \in K^{n+1}$ that $f(x) = g(x)$.*

Proof. Suppose that $f(x) \neq g(x)$ for every $x \in K^{n+1}$. Then we can define a continuous mapping $h\colon K^{n+1} \to S^n$ putting

$$h(x) = \frac{f(x)-g(x)}{\|f(x)-g(x)\|}.$$

But this is not consistent with Theorem 1 since we shall prove that $h|S^n$ is essential. In fact, $f|S^n$ being essential, it is enough to show a homotopy between $f|S^n$ and $h|S^n$. Since $f(x) \neq tg(x)$ for $x \in S^n$, $0 \leqslant t \leqslant 1$ (because $f(x) \neq g(x)$ and $\|f(x)\| = 1$ for $x \in S^n$), we obtain such a homotopy putting

$$h_t(x) = \frac{f(x)-tg(x)}{\|f(x)-tg(x)\|} \quad \text{for} \quad x \in S^n,\ 0 \leqslant t \leqslant 1,$$

q. e. d.

Remark. If one uses the known fact that the identity is an essential mapping of S^n onto S^n, then Theorem 2 gives the Fixed Point Theorem for the closed n-cell (if one takes $f =$ the identity).

TABLE DES MATIÈRES DU VOLUME VIII

COMMUNICATIONS

P R O B L È M E S

P 1, P 2, ... désignent les problèmes posés; **R 1, R 2**, ... désignent les réponses et remarques concernant le problème en tête de ligne. Les autres numéros indiquent les pages. Celles des communications déjà citées dans les remarques sont omises. Le trait | indique la clôture du problème.

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