

$\sum_{n=1}^N (j_n(N) - j_n)^2$  goes to zero as  $N$  approaches infinity, where  $\{j_n\}$  is the solution to equation (2).

These last two theorems are applied in considering the potential problem involving the temperature in a sphere having prescribed temperature in the top half and Newtonian heat loss through the lower half. (In fact, a survey of some seventy papers involving dual orthogonal series shows that these last two theorems are sufficiently general to apply to all of them.)

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## CONFORMAL GEOMETRY IN HIGHER DIMENSIONS. I

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Conformally Euclidean manifolds are one type of higher dimensional generalization of Riemann surfaces. They are studied and classified here from that point of view (cf. [2] and [3]).

1. DEFINITION 1.1. *A conformal structure on a manifold  $M$  is a covering  $\{U_\alpha\}$  together with a metric  $g_\alpha$  on  $U_\alpha$  such that whenever  $U_\alpha \cap U_\beta \neq \emptyset$ ,  $g_\alpha$  and  $g_\beta$  are conformally related on  $U_\alpha \cap U_\beta$ .*

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