is even (2^{α_0}) *then the subgroup must involve operators of order* 4 *and* $\alpha_0 > 3$. Since any number of these factors may be non-abelian, there cannot be an upper limit to the number of non-abelian groups which may be conformal with one abelian group. This fact may be seen in many other ways.

STANFORD UNIVERSITY,
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THE INFINITESIMAL GENERATORS OF CERTAIN PARAMETER GROUPS.

BY DR. S. E. SLOCUM.

(Read before the American Mathematical Society, October 26, 1901.)

BY means of the r independent infinitesimal transformations

$$X_j \equiv \sum_1^n {}_k\, \xi_{jk}(x_1, \cdots, x_n) \frac{\partial}{\partial x_k} \qquad (j = 1, 2, \cdots, r)$$

we may construct a family of transformations

$$x_i' = f_i(x_1, \cdots, x_n, a_1, \cdots, a_r) \qquad (i = 1, 2, \cdots, n) \tag{1}$$

with r essential parameters $a_1, \cdots, a_r$, where $f_i(x, a)$ is defined in the neighborhood of the identical transformation by the series

$$f_i(x, a) \equiv x_i + \sum_1^r {}_j\, a_j X_j x_i + \frac{1}{2\,!} \sum_1^r {}_j \sum_1^r {}_k\, X_j X_k x_i + \cdots$$
$$(i = 1, 2, \cdots, n).$$

The transformations defined by these equations for assigned values of the a's may be denoted by T_a. Let the differential operators X_j ($j = 1, 2, \cdots, r$) satisfy Lie's criterion, that is, let

$$X_j X_k - X_k X_j \equiv \sum_1^r {}_s\, c_{jks} X_s \qquad (j, k = 1, 2, \cdots, r).$$

Then by Lie's chief theorem, the family of transformations T_a, defined by equations (1), forms a group G.* Conse-

* Continuierliche Gruppen, pp. 390–391.