

*Transformation-Theoretic Problems in Variant Field Theory-II: Lagrangian Classes Admitting an r -Parameter Invariance Group**

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Introductory remarks. This paper is a direct continuation of [1]. The results as well as the symbolism of the paper [1] will be used here without further notice.

Some comment is in order as to the ranges of the various index sets. As previously noted, lower case Greek indices have the range one through four. Throughout this paper, capital Roman indices will have the range one through N , lower case Roman indices at the beginning of the alphabet will have the range one through r , capital Greek indices will have the range one through $5N + 4$, while the index i will have the range zero through four:

$$\begin{aligned}\alpha, \beta &= 1, \dots, 4, & A, B &= 1, \dots, N, \\ a, b &= 1, \dots, r, & \Lambda, \Sigma &= 1, \dots, 5N + 4, \\ i &= 0, 1, \dots, 4.\end{aligned}$$

There will be certain instances, however, in which different indices and index sets will be involved. In these cases the ranges will be specifically stated.

1. Embryonic spaces. The following basic question was raised in [1], Sec. 4: For a given group of coordinate transformations, what is the most general Lagrangian function for which the variant field equations will lead to quantities $L_{\beta\gamma}^{\alpha}$ that transform according to the law of transformation for affinities? The concern of this paper is the following subquestion: *For a given r -parameter continuous group of coordinate transformations, what is the most general Lagrangian functions for which the variant field equations will lead to quantities $L_{\beta\gamma}^{\alpha}$ that*

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