HANKEL FORMS OF ARBITRARY WEIGHT
OVER A SYMMETRIC DOMAIN
VIA THE TRANSVECTANT

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ABSTRACT. Invariant Hankel forms of higher weight are constructed corresponding to a symmetric domain. The construction generalizes the one in the case of the disk [13] and the ball [16].

0. Introduction. Hankel forms of arbitrary high weight are known in the case of the disk [13] and the ball [16]. In this paper we suggest a definition of Hankel form which, in principle, works for any symmetric domain.

We construct them with the aid of certain bilinear different covariants called transvectants. The use of this strange word (German: *Überschiebung*) is borrowed from classical invariant theory, where objects called transvectants were defined by P. Gordan [7]; a "rediscovery" appeared thus nearly 100 years later in [13]. Recall that classical invariant theory is mainly about the group $SL(2, \mathbf{C})$. Thus, it is now a question of generalizing the transvectant to the case of an arbitrary semi-simple Lie group.

Roughly speaking, the success of our approach depends on the use of a "higher order version" of the Bergman kernel or, better, the Bergman operator (the fact that the Bergman kernel is the determinant of the Bergman operator).

The above is carried out in Section 2. Some auxiliary considerations are made in Sections 3 and 4; these sections are to some extent expository. Section 1 contains preliminary material. In Section 5 some concrete examples of transvectants are worked out and at the end a general formula stated as a theorem is mentioned.