

SOME PROBLEMS IN THE MODERN THEORY OF TRANSMUTATIONS

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Methods of transmutation theory now form an important part of modern mathematics, cf. [1]- [5]. They have many applications to theoretical and applied problems.

Let us just itemize some problems in the modern transmutation theory.

1. Theory of Buschman–Erdelyi transmutations [5]. This class of operators have many applications in partial differential equations, Radon transform theory and many other problems.

2. Transmutations are closely connected with commutants. And if commutants in different spaces of analytic functions are completely described by operator convolution theory of I. Dimovski [6], commutants in standart spaces like C^k are much more difficult to characterize, it was done only recently.

3. Sonine–Dimovski and Poisson–Dimovski transmutations for hyper–Bessel functions and equations [6]- [7].

4. Sonine and Poisson type transmutations for difference–differential operators of Dunkle type.

5. Applications of transmutations to generalized analytic function theory [8].

6. Methods of fractional integrodifferentiation and integral transforms with special function kernels [9]. In this field let us note a composition method for construction many classes of transmutations [5].

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