Report on the Ph.D. thesis "Continuation of power series by entire and meromorphic continuation of coefficients" by Aleksandr Mkrtchyan

The thesis of Aleksandr Mkrtchyan is devoted to the important mathematical problem of the contemporary complex analysis, namely the investigation of analytic continuation for the functions of several complex variables. The main topic of the thesis under consideration is the continuation across some arc (or multi-arc) lying on the Shilov boundary of a maximal polydisk of convergence. The main tools of investigation are multivariate power series whose coefficients $(f_k)_{k \in \mathbb{Z}^n}$ are interpolated (as functions of k) by some either entire or meromorphic functions $\varphi(k)$ with controlled growth for their indicator functions.
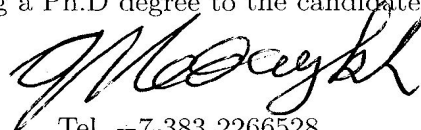
The above mentioned arc is called the *arc of regularity*. Polya (1927) found conditions for analytic continuability of a series to the whole complex plane except some boundary arc [12]. Later, in the end of XX-th century, a description of an open arc of regularity was given in the papers by N. U. Arakelian. He gave a criterion for a given arc of a unit circle to be an arc of regularity for a given power series in terms of the indicator function of the interpolating entire function.

The first chapter deals with the analytic continuation of one-dimensional power series. Here, some conditions are established for analytic continuability (or uncontinuability) of series across a given boundary arc. According to the Kotelnikov's formula, such conditions are crucial for the development of methods of data and digital signal processing.

In chapter 2 the continuability of power series in several variables is studied. In the first section the Arakelian's result are extended on the arc of regularity formulated above to the case of multiple series. In the second section of Chapter 2 the author gives conditions for analytic continuation to a sector of a power series whose coefficients are interpolated by values of an entire or a meromorphic function. The obtained results are illustrated by very elegant examples. The results of dissertation were published in three original paper by the author and reported on various international conferences. They are well recognised by the international mathematical community. All the main ideas of Ph.D. are fresh and new and belong to the author. The logical structure of the is excellent. All the obtained results are justified by strong mathematical arguments. The proofs given in Ph.D. clear demonstrate the author's knowledge of the contemporary literature on multidimensional complex analysis. The language of the present investigation is very light and completely understandable for the experts.

In conclusion, I recommend without any hesitation the defence of A. Mkrtchyan's thesis. I should honestly say that the scientific level of the dissertation corresponds to the highest international standards and conferring a Ph.D degree to the candidate.

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