

# ON VECTOR CONTINUED FRACTIONS ASSOCIATED WITH NIKISHIN SYSTEMS

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Vector continued fractions are a useful tools in the investigation of simultaneous rational approximations (Hermite-Padé approximations) and multiple orthogonal polynomials. An algorithm of vector continued fraction representation for a system of holomorphic functions can be considered as an algorithm of calculation of recurrence coefficients for the associated multiple orthogonal polynomials. Nikishin systems appear as a wide class of systems of holomorphic functions with a common support of generating measures. From the recurrence coefficients point of view any Nikishin system with the same support of generating measures is a compact perturbation of the system with periodic recurrence coefficients (see [1]). In this paper we study periodic vector continued fractions associated with Nikishin systems. Our main results are: transformation of the vector continued fraction to the Stieltjes type fraction, calculation of the generating measures of Nikishin system on the base of this transformation, investigation of the Stieltjes type vector continued fractions associated with Nikishin systems. This work is partly supported by RFFI grant 10-01-00682.

## References

- [1] A. I. Aptekarev, V. Kalyagin, G. Lopez Lagomasino, I. A. Rocha, *On the limit behavior of recurrence coefficients for multiple orthogonal polynomials*, Journal of Approximation Theory 139 (2006), p.346–370.