

SIDE 14.2



Contribution ID : 2

Rational interpolation/approximation and integrability

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Content :

It is well known that the rational (or Padé) approximants are closely related with the discrete-time Toda equation. The structural connection with orthogonal polynomials provides a link between the theory of integrable systems and various classical results of applied mathematics and numerical analysis. Inspired by recent advances on symmetry and integrability of difference equations I would like to discuss several generalizations of the relation (some of them already known):

- * the role of Hirota's discrete KP system;
- * non-commutative versions of the classical results;
- * approximation as a confluent limit of the interpolation.

[1] A. Doliwa, A. Siemaszko, Integrability and geometry of the Wynn recurrence, Numer. Algorithms doi: 10.1007/s11075-022-01344-5

[2] A. Doliwa, A. Siemaszko, Hermite-Padé approximation and integrability, arXiv:2201.06829

[3] A. Doliwa, Non-commutative Hermite-Padé approximation and integrability, Lett. Math. Phys. 112 68 (2022) doi: 10.1007/s11005-022-01560-z

[4] A. Doliwa, Non-autonomous multidimensional Toda system and multiple interpolation problem, J. Phys. A: Math. Theor. 55 (2022) 505202 (17 pp.) doi: 10.1088/1751-8121/acad4d

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