

# The multicomponent 2D Toda hierarchy: generalized matrix orthogonal polynomials, multiple orthogonal polynomials and Riemann--Hilbert problems

Carlos Alvarez-Fernandez, Ulises Fidalgo, Manuel Manas

(Submitted on 4 Nov 2009)

We consider the relation of the multi-component 2D Toda hierarchy with matrix orthogonal and biorthogonal polynomials. The multi-graded Hankel reduction of this hierarchy is considered and the corresponding generalized matrix orthogonal polynomials are studied. In particular for these polynomials we consider the recursion relations, and for rank one weights its relation with multiple orthogonal polynomials of mixed type with a type II normalization and the corresponding link with a Riemann--Hilbert problem.

Comments: 15 pages

Subjects: **Exactly Solvable and Integrable Systems (nlin.SI)**; Classical Analysis and ODEs (math.CA)

Cite as: [arXiv:0911.0941v1](https://arxiv.org/abs/0911.0941v1) [nlin.SI]

## Submission history

From: Manuel Manas [[view email](#)]

[v1] Wed, 4 Nov 2009 22:11:36 GMT (14kb)

*Which authors of this paper are endorsers?*

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

nlin.SI

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [0911](#)

Change to browse by:

[math](#)

[math.CA](#)

[nlin](#)

## References & Citations

- [CiteBase](#)

## Bookmark([what is this?](#))

[CiteULike logo](#)

[Connotea logo](#)

[BibSonomy logo](#)

[Mendeley logo](#)

[Facebook logo](#)

[del.icio.us logo](#)

[Digg logo](#)

[Reddit logo](#)