

List of Publications

Qualifying monographs

- [1] Die klassische Charaktertheorie der Mathieugruppen.
Diploma thesis, Mainz 1993 (101 p.).
- [2] Funktionalanalytische Methoden bei der Behandlung von Solitonengleichungen.
PhD thesis, Jena 1996 (104 p.).
- [3] Integrable Systems and Operator Equations.
Habilitation thesis, Jena 2005 (212 p.).
<http://apachepersonal.miun.se/~corsch/publ/Habilitation.PDF>.

Peer-reviewed articles

- [4] *An operator-theoretic approach to the Toda lattice equation.*
Physica D **122**, 37–61 (1998).
- [5] (with B. Carl)
Nonlinear equations in soliton physics and operator ideals.
Nonlinearity **12**, 333–364 (1999).
- [6] (with B. Carl)
Ein direkter Ansatz zur Untersuchung von Solitonengleichungen.
Jahresber. Deutsch. Math.-Verein. **102**, 102–148 (2000).
A translation is available on
<http://apachepersonal.miun.se/~corsch/publ/JahresberichteDMV.pdf>.
- [7] *Solitons of the sine-Gordon equation coming in clusters.*
Revista Mat. Complut. **15**, 265–325 (2002).
- [8] *On negatons of the Toda lattice.*
J. Nonlinear Math. Phys. **10**, 181–193 (2003).
- [9] *From the non-abelian to the scalar two-dimensional Toda lattice.*
Glasgow Math. J. **47**, 177–189 (2005).
- [10] *A non-abelian Nonlinear Schrödinger equation and countable superposition.*
J. Gen. Lie Theory Appl. **2**, 245–250 (2008).
- [11] *Explicit solution formulas for the matrix-KP.*
Glasgow Math. J. **51**, 147–155 (2009).

- [12] (with S. Carillo)
Noncommutative Korteweg-de Vries and modified Korteweg-de Vries hierarchies via recursion methods.
 J. Math. Phys. **50**, 073510, pp.14 (2009).
- [13] *Noncommutative AKNS systems and multisoliton solutions to the matrix sine-Gordon equation.*
 Discrete and Continuous Dynamical Systems **2009**, 678–690 (2009).
- [14] (with S. Carillo)
A non-commutative operator-hierarchy of Burgers equations and Bäcklund transformations.
 In: ‘Applied and Industrial Mathematics in Italy III: Selected Contributions from the 9th SIMAI Conference’, p. 175–185, Ed: E. De Bernardis, R. Spigler, and V. Valente, Series on Advances in Mathematics for Applied Sciences, Vol. 82, World Scientific 2009.
- [15] *Cauchy-type determinants and integrable systems.*
 Linear Algebra Appl. **433**, 447–475 (2010).
- [16] (with S. Carillo)
Recursion techniques and explicit solutions of integrable noncommutative hierarchies.
 In: ‘Proceedings WASCOM 2009. 15th International Conference on Waves and Stability in Continuous Media’, p.74–80, Ed: A. Greco, S. Rionero, and T. Ruggeri, World Scientific 2010.
- [17] *The noncommutative AKNS systems: Projection to matrix systems, countable superposition, and soliton-like solutions.*
 Special issue on Current Trends in Integrability and Nonlinear Phenomena, J. Phys. A **43**, 434030, pp. 18 (2010).
- [18] (with S. Carillo)
Matrix Korteweg-de Vries and modified Korteweg-de Vries hierarchies: Noncommutative soliton solutions.
 J. Math. Phys. **52**, 053507, pp. 21 (2011).
- [19] *Structural properties of the noncommutative KdV recursion operator.*
 J. Math. Phys. **52**, 113504, pp. 16 (2011).
- [20] (with S. Carillo)
On the recursion operator for the noncommutative Burgers hierarchy.
 J. Nonlin. Math. Phys. **19**, 1250003, pp. 11 (2012).
- [21] (with S. Carillo and M. Lo Schiavo)
Bäcklund transformations and non-abelian nonlinear evolution equations: a novel Bäcklund chart.
 SIGMA Symmetry Integrability Geom. Methods Appl. **12**, 087, pp. 17 (2016).

- [22] *Asymptotics for the multiple poles solutions of the Nonlinear Schrödinger equation.* Nonlinearity **30**, 2930–2981 (2017).
- [23] (with G. Biondini and S. Li)
On the degenerate soliton solutions of the focusing nonlinear Schrödinger equation. J. Math. Phys. **58**, 033507, pp. 27 (2017).
- [24] (with S. Carillo and M. Lo Schiavo)
Recursion operators admitted by non-Abelian Burgers equations: Some remarks. Special issue on Applied Scientific Computing XIV for Challenging Applications, Mathematics and Computers in Simulation, **147** 40–51 (2018).
- [25] (with S. Carillo, M. Lo Schiavo, and E. Porten)
A novel noncommutative KdV-type equation, its recursion operator, and solitons. J. Math. Phys. **59**, 043501, pp. 14 (2018).
- [26] (with S. Carillo and M. Lo Schiavo)
Abelian versus non-Abelian Bäcklund charts: Some remarks. Evolution Equations and Control Theory **8**, 43–55 (2019).
- [27] (with T. Nilson)
Solution formulas for the two-dimensional Toda lattice and particle-like solutions with unexpected asymptotic behaviour. J. Nonlin. Math. Phys. **27**, 57–94 (2020).
- [28] (with S. Carillo and M. Lo Schiavo)
Matrix solitons solutions of the modified Korteweg-de Vries equation. In ‘Nonlinear Dynamics of Structures, Systems and Devices’, Proceedings of the First International Nonlinear Dynamics Conference (NODYCON 2019), Volume I, p.75–83, Ed: W. Lacarbonara, B. Balachandran, J. Ma, J.A. Tenreiro Machado, and G. Stepan, Springer 2020.

Invited book chapters

- [29] *Matrix solutions for equations of the AKNS system.*
In: ”Nonlinear Systems and their Remarkable Mathematical Structures”, Chapter B.5, p. 256–293, Ed: N. Euler, CRC Press, Boca Raton, FL, USA 2018.

Selected preprints

- [30] (with S. Carillo)
Construction of soliton solutions of the matrix modified Korteweg-de Vries equations. Submitted.
- [31] (with S. Carillo and M. Lo Schiavo)
N-soliton matrix mKdV solutions: a step towards their classification. In preparation.