UNIVERSITÀ DEGLI STUDI DI MILANO

Systems with Painlevé transcendents in the coefficients free of movable critical points

Time: **June, 22th (Monday), 2026**
17:30 (Rome, GMT+1)

Location: **Aula C13**
Settore Didattico Colombo M.

We construct a generalisation of what we call Bureau-Guillot systems: systems of first order equations with coefficient functions being Painlevé transcendents. The same Painlevé equation is related to the system and it appears as a regularising condition in the regularisation process. We extend the results of Bureau-Guillot considering polynomial systems free of movable critical points with degree larger than 2. These systems contain not only transcendents P-I and P-II in the coefficients, but also transcendents P-III, P-IV, P-V and P-VI (and/or their derivatives). We also present a simpler version of the change of variables to construct the analogues of the Bureau-Guillot systems in the ”mixed” case: systems related to the equation P-J, with J=I, ..., VI, containing coefficient functions that are solutions to P-K with P-K ≠ P-J.
The talk is based on the joint work with G. Filipuk [1,2].

References

1 M. Dell’Atti, G. Filipuk: Quadratic Bureau-Guillot systems with the first and second Painlevé transcendents in the coefficients. Part I: geometric approach and birational equivalence, Results Math. (2026)

2 M. Dell’Atti, G. Filipuk: Generalisation of Bureau-Guillot systems with Painlevé transcendents in the coefficients, Preprint (2026).

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Marta Dell’Atti got a master in Theoretical Physics, then worked as a data analyst in Italy for 2 years. Then, she moved to the UK to undertake a PhD in Mathematics at Northumbria University, under the supervision of Antonio Moro. Dell’Atti has held post-doctoral positions at University of Kent, the University of Portsmouth, and the University of Warsaw. Dell’Atti’s research interest is in the field of integrable systems with focus on the algebraic description via R-matrices, the geometric aspects of complex differential equations, and the Hamiltonian theory of PDEs and Hydrodynamic Systems.