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A Talk at the 2nd ISNMP Conference

Bad Ems, 28 June to 4 July 2026

Regular Session:

Speaker: Sandra Carillo (Sapienza University of Rome, Italy)

Collaborators: Cornelia Schiebold and Federico Zullo

Title: *Bäcklund transformations and non-linear soliton equations: some recent results*

Abstract: An excursus on some recent results concerning applications of Bäcklund transformations in the study of soliton questions is provided. In particular, joint results with Cornelia Schiebold, and Federico Zullo, are considered. The focus is on the admitted recursion operator as well as on the properties preserved under Bäcklund transformations. Then, the focus is on the Hamiltonian and bi-Hamiltonian structure admitted by equations which are linked via Bäcklund transformations. Third order and fifth order soliton equations and the Bäcklund transformations which link them are considered. The results can be extended to the corresponding hierarchies. Notably, also in the non-commutative case, crucial properties are preserved via Bäcklund transformations. Results and new perspectives both in the commutative as well as in the non-commutative one are presented.