

## A survey on biorthogonal polynomials and functions

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**05.15****Clemente Cesarano***(Section of Mathematics – Uninettuno University, Roma, Italy)***Time:** Tuesday 23.07., 16:30 - 17:00, Room HS 3

**Abstract:** The theory of orthogonal polynomials is well established and detailed, covering a wide field of interesting results, as in particular for solving certain differential equations. On the other side the concepts and the related formalism of the theory of bi-orthogonal polynomials is less developed and much more limited. By starting from the orthogonality properties satisfied from the ordinary and generalized Hermite polynomials is possible to derive a further family (known in literature) of these kind of polynomials which are bi-orthogonal with their adjoint. This aspect allows us to introduce functions recognized as bi-orthogonal and investigate further generalizations of families of orthogonal polynomials. Furthermore, the use of the so called Chebyshev systems allows us to state relevant relations with bi-orthogonal polynomials with positive kernel.