

Gilson, C.; Lambert, F.; Nimmo, J.; Willox, R.

On the combinatorics of the Hirota D -operators. (English) Zbl 0868.35101

Proc. R. Soc. Lond., Ser. A 452, No. 1945, 223-234 (1996).

Summary: A generic formula is presented which relates the Hirota D -operators to simple combinatorics. Particular classes of partition polynomials (Bell-polynomials and generalizations) are found to play an important role in the characterization of bilinearizable equations. As a consequence it is shown that bilinear Bäcklund transformations for single-field bilinearizable equations linearize systematically into corresponding Lax-pairs.

MSC:

[35Q53](#) KdV equations (Korteweg-de Vries equations)

[05E35](#) Orthogonal polynomials (combinatorics) (MSC2000)

[33C80](#) Connections of hypergeometric functions with groups and algebras,
and related topics

Cited in **80** Documents

Keywords:

Bell-polynomials; Hirota D -operators; partition polynomials; bilinearizable equations; Bäcklund transformations; Lax-pairs

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