SIDE 14.2

Contribution ID : 36

Singularity analysis and bilinear approach to some Bogoyavlensky differential difference equations

Thursday 22 Jun 2023 at 10:15 (00h30')

Content :

We discuss singularity analysis and bilinear integrability of four Bogoyavlensky differential-difference equations. Three of them are completely integrable and the fourth is, to our knowledge, a new one. Blending the singularity confinement with Painlevé property reveals strictly confining and anticonfining (weakly confining) singularity patterns. The strictly confining patterns are useful because they provide different representations using tau functions and a possible extension of the so called "express method" for testing integrability. For the new proposed equation we get also the bilinear form and multisoliton solution, being a good candidate for a new integrable system. In addition, using bilinear formalism we recover the integrable time-discretisations of the first three systems.

Primary authors : Dr. CARSTEA, Adrian Stefan (Institute of Physics and Nuclear Engineering, Dept of Theoretica Physics, Magurele, Bucharest 077125, Romania)

Co-authors :

Presenter : Dr. CARSTEA, Adrian Stefan (Institute of Physics and Nuclear Engineering, Dept of Theoretica Physics, Magurele, Bucharest 077125, Romania)

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