Lax representations with non-removable parameters and integrable hierarchies of PDEs via exotic cohomology of symmetry algebras

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Abstract**:**

We develop the technique of constructing Lax representations for PDEs via non-central extensions generated by non-trivial exotic 2-cocycles of their contact symmetry algebras. We show that the method is applicable to the Lax representations with non-removable spectral parameters. Also we demonstrate that natural extensions of the symmetry algebras produce the integrable hierarchies associated to their PDEs.