

SIDE 14.2



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Multidimensional integrable systems from contact geometry

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Content :

In the present talk we address a longstanding problem of search for integrable partial differential systems in four independent variables, i.e. in the case most relevant for possible applications in physics, and show that such systems are significantly less exceptional than it appeared before: in addition to a number of previously known examples like the (anti)self-dual Yang--Mills equations there is a large entirely new class of such systems with nonisospectral Lax pairs of a novel kind related to contact vector fields. In particular, we will show that this class includes inter alia two new infinite families of such systems as well as e.g. the first example of an integrable system in four independent variables with a nonisospectral Lax pair which is algebraic, rather than rational, in the spectral parameter; please see the papers A. Sergyeyev, Lett. Math. Phys. 108 (2018), 359-376 & A. Sergyeyev, Appl. Math. Lett. 92 (2019), 196-200 for further details.

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