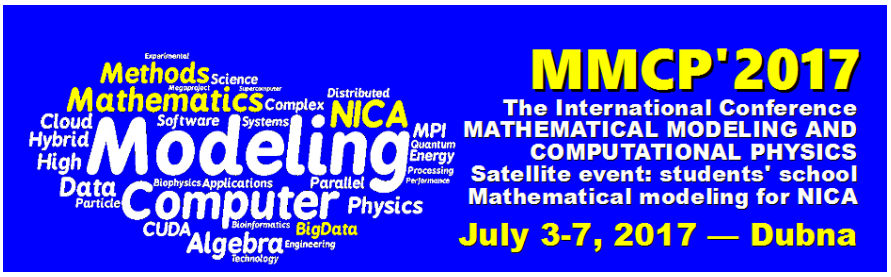

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A COMPUTATIONAL ALGORITHM FOR COVARIANT SERIES EXPANSIONS IN GENERAL RELATIVITY

Tuesday, 4 July 2017 13:30 (15 minutes)

We present a new algorithm for computing covariant power expansions of tensor fields in generalized Riemannian normal coordinates introduced in some neighborhood of a parallelized k-dimensional embedded submanifold the case corresponds to a point. The algorithm is applicable for nonmetric connections, possibly with the torsion. The power series coefficients of an arbitrary real analytic tensor field are expressed in terms of its covariant derivatives and covariant derivatives of the curvature and the torsion. We discuss different ways to reduce normal polynomial expansions to the irreducible form, enumerate the number of summands in the coefficients, and evaluate the computational complexity of the algorithm.

Primary author: TSIRULEV, Alexander (Tver State University)

Presenter: TSIRULEV, Alexander (Tver State University)

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