

Abstract Submitted
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Distributed computation of the Kolmogorov-like cascades of the Couette flow by the arbitrary-precision differentiation STANISLAV MIROSHNIKOV, Syncsort Inc. — The effect of the period of perturbations on the spatiotemporal statistics of the Kolmogorov-like cascades of the transitional Couette flow is explored using a new method of arbitrary-precision differentiation of trigonometric, hyperbolic, and elliptic structures. The trigonometric, hyperbolic, and elliptic structures are constructed and their differentiation is reduced to an algebraic processing, which may be executed with symbolic and numeric parameters. Computation of high-order derivatives by the arbitrary-precision differentiation and summation of the Boussinesq-Rayleigh-Taylor series for the perturbed Couette flow is implemented in Maple, Python, and C++. Performance of the proposed algorithms is compared both for workstations and clusters.

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