New Approaches for Generating Adaptive Numerical Grids

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The paper presents recent results related to the development of algorithms and codes for generating both structured and unstructured grids with the use of operator Beltrami. An original description of the method was given in the monograph V.D. Liseikin Ä Computaional Differential Geometry Approach to Grid Generation", 2004, Berlin, Springer. Control of grid properties is realized by monitor metrics introduced in the physical geometry under consideration. The metrics for generating grids adapting to vector fields, gradients, and/or values of physical quantities are presented. Applications of adaptive grids to fluid dynamics and plasma related problems are demonstrated.

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