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B-splines and Bernstein basis polynomials

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Computational methods based on a B-spline decomposition have found numerous applications in different fields of physics. The Cox - de Boor recurrence relation is a main tool for numerical calculations with B-splines. Here we derive the analytic representation of B-splines for an arbitrary knot sequence and order using decomposition on Bernstein basis polynomials. This representation allows to perform analytically many calculations with B-splines. Few examples of applications are presented.

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