B-spline Algorithm in Atomic and Molecular Physics

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The application of B-spline functions to calculations of atomic and molecular structures and dynamics has been one of the most significant achievements in the field of atomic and molecular physics in recent decades. I will introduce properties of B-spline functions, their main applications, and discuss why they are useful to solve different physics problems. Special focus will lie on atomic structures in superstrong magnetic fields found in the atmospheres of white dwarf stars and neutron stars with magnetic field strengths $10^2 - 10^5$ T and $10^7 - 10^9$ T.