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## **ABSTRACT**

### **HIGH DEGREE B-SPLINE SOLUTION FOR SINGULARIY**

#### **PERTURBED BOUNDARY VALUE PROBLEM**

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**This study deals with the singularly perturbed boundary value problems. It is very active filed now a days, especially with improvement technology of the computer machine which is help us to do million and million of mathematical operations. The perturbation theory benefits from this improvement to solve the boundary value problems, this kind of a applications can help us to solve a lot of problems occur in many areas of engineering and applied mathematics such as fluid mechanics, quantum mechanics, optimal control, chemical reactor theory, aerodynamics, reaction-diffusion process, geophysics, heat transport problems with large Peclet number and Navier-Strokes flows with large Reynolds numbers etc.**

**Perturbation theory comprises mathematical methods that are used to find an approximation solution to a problem which cannot be solved exactly, by starting from the exact solution to a related problem. Perturbation theory is applicable if the problem at hand can be formulated by adding a "small" term to the mathematical description of the exactly solvable problem.**

**The study focuses on the some methods that solved this kind of the problems, the new scheme was used to apply the high degree b-spline interpolation, the result compared with the published methods recently.**

**Keywords: Perturbation theory, B-spline Interpolation, Finite Deference Method, Shooting Method.**