

Muntz Spectral Methods with Applications to Some Singular Problems

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In this talk we will present a fractional spectral method for a class of equations with non-smooth solutions. The proposed method makes new use of the classical fractional polynomials, also known as Muntz polynomials. We will show how to construct efficient fractional spectral methods for some integro-differential equations which can achieve spectral accuracy for solutions with limited regularity. A detailed convergence analysis will be provided. The potential application of this method covers a large number of problems, including integro-differential equations with weakly singular kernels, fractional differential equations, and so on.