ABSTRACT

Thomas-Fermi model describe electron distribution for heavy atoms at ground state (in this work we use mercury atom; Z=80). In this thesis we propose algorithms for solving dimensionless Thomas-Fermi equation; $y''(x) = \dfrac{y^{3/2}(x)}{x^{1/2}}$, namely "Modified Adomian Decomposition Method (MADM), incorporating Padé approximants". We devise and employ Order-By-Order Extraction Technique (OBOET) for calculating Adomian polynomials; A_n , for several types of nonlinear ordinary differential equations, especially Thomas-Fermi equation.