

UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

**SEMI-ANALYTICAL ITERATIVE METHOD FOR SOLVING
KLEIN-GORDON EQUATION**

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**Report submitted in partial fulfillment of the requirement
for the degree of
Bachelor of Science (Hons.) Mathematics
Faculty of Computer and Mathematical Sciences**

JULY 2019

ACKNOWLEDGEMENTS

IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

Firstly, we are grateful to Allah SWT for giving us the strength to complete this project successfully. We would like to express our gratitude to all those who had guided us to complete this report.

We sincerely thank our final year project supervisor, Dr. Mat Salim Bin Selamat for his guidance, encouragement and suggestions in helping us to complete our project his guidance, encouragement and suggestions in helping us to complete our project especially in writing this report.

Furthermore, we would like to express my deepest thanks to the crucial role of the Librarian, who gave the permission to use all the necessary equipment and materials needed to complete our project. Special gratitude to our supportive classmates who were always gives an idea and sharing opinions with us for any improvements in completing our project.

Lastly, a glorious honour mention goes to our families for their support and understandings on us in completing this project. Without helps of the particular that mentioned above, this report would not have been successful.

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ABSTRACT

In this paper, the Semi Analytical Iterative Method (SAIM) was applied to generate approximate solutions of the Klein-Gordon equations. Klein-Gordon equation is known as a relativistic wave equation. Various methods have been approached to solve this equation such as Modified Adomian Decomposition Method (MADM), Variation Iterative Method (VIM), Homotopy Perturbation Method (HPM) and many more. The problem is that the convergence of iteration method is very difficult to achieve since the iteration method that is delicate to the initial conditions and the number of unknowns in the differential equation and the calculation seems quite difficult to solve. Comparisons with the exact solutions obtained by MADM, VIM and HPM show the potential of SAIM in solving Klein-Gordon equations. As a result, SAIM is reliable and simple calculation. This method only use direct differentiation method and the results were successfully explained.