

Einstein's Generalities and their Solutions for Different Combinations of Scalar, Massive Gravitational and Electromagnetic Fields

D. N. Warade¹ and Snehal G. Padwekar²

¹Associate Professor, Department of Mathematics, Dr. Khatri Mahavidyalaya, Tukum, Chandrapur

²Research Scholar (IHLR & SS), Dr. Khatri Mahavidyalaya, Tukum, Chandrapur

Abstract: *In this present paper we have obtained the of Einstein's Field Equations for the plane wave solutions $\sqrt{y^2 + z^2} - t$ with one time exist. In general theory of relativity in the four different combinations as follows:*

- (a) Zero massive scalar field coupled with gravitational field.
- (b) Zero mass scalar field coupled with gravitational & electromagnetic field.
- (c) Massive scalar field coupled with gravitational field.
- (d) Massive scalar field coupled with gravitational & electromagnetic field

Keywords: Einstein's field equation, Mathematical formulation of EFEs, Scalar fields, gravitational fields, electromagnetic fields, the energy momentum tensor & the fundamental tensor.

REFERENCES

- [1]. The theory of the Relativity of motion -- Richard c. Tolman, Oxford Clarendon Press First edition 1934
- [2]. Introduction to special Relativity --Wolfgang Rindler Oxford university Press.
- [3]. Relativity --WGV ROSSER, EXETER UNIVERSITY, LONDON, BUTTERWORTHS 1964.
- [4]. READABLE RELATIVITY, Bell, London Cambridge university Press, 1920.
- [5]. Relativity, Einstein A., Methuen, London 1920
- [6]. Kadhao S. R. and Thengane K. D. (2002), some plane wave solution of the field equations $R_{ij}=0$ in four-dimensional space-time, Einstein Foundation International, Volume 12, 2002, India.
- [7]. Takeno H (1961), 'The Mathematical theory of plane gravitational wave in general relativity' Scientific report of the research institute for theoretical Physics, Hiroshima University, Hiroshima-Ken Japan. Published Date-01.01.1961, OSTI identifier 4751857 NSA-17-016858.