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Some Charged Fluid Spheres in General Relativity

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Abstract: The present paper provides some solutions of Einstein Maxwell field equations for Some Charged Fluid Spheres by using a judicious choice of metric potential g_{11} and g_{44}. The central and boundary conditions have been also discussed.
Keywords and Phrases: Metric, Potential, Boundary Conditions, Charged Fluid Spheres.

1. Introduction

A various authors have already studied the charged fluid distribution in equilibrium. Bonner [4], Effinger [6] and Kyle and Martin[11] have considered the interior solution for a static charged sphere. As the field equations do not completely determine the system different solutions were obtained by Effinger[6], Wilson[16] and Kyle and Martin[11] by using different conditions. Some exact static solutions of Einstein-Maxwell equations representing a charged fluid sphere were obtained by Singh and Yadav[14]. Shi-Chang[15] found some conformal flat interior solutions of the Einstein-Maxwell equations for a charged stable static sphere. These solutions satisfy physical conditions inside the sphere. Xingxiang[18] obtained an exact solution by specifying matter distribution and charge distribution. The metric is regular and can be matched to the Reissner-Nordstrom metric and pressure is finite. In the limit of vanishing charge, the solution reduces to the interior solution of an uncharged sphere. Buchdahl[5] has also considered some regular general relativistic charged fluid spheres. Some other cases of the interior solutions for charged fluid sphere have been presented by Bekenstein[3], Bailyn[2], Whiman and Burch[17], Kramer and Neugebauer[9], Krori and Barua[10], Junevicous[8], Florides[7], Noluka[12, 13] and Yadav et.al.[19].

In this paper, we have solved Einstein-Maxwell field equations for static changed fluid spheres by using different assumptions. These solutions satisfy physical conditions. The central and boundary conditions have been also discussed. The pressure