

Abstract:

The use of conformal transformation as a method for generating solutions of Einstein's equations has been mainly studied in the cases where the original spacetime is vacuum. The generated spacetimes then frequently belong to the class of  $pp$ -waves. In the present work, the electrovacuum spacetimes are studied, i.e the solutions of coupled Einstein's and Maxwell's equations. By using the conformal transformation, it is possible to circumvent solving the later equations. This method is concretely studied for null Einstein-Maxwell fields and it turns out that the admissible spacetimes are  $pp$ -waves again. However, if the method is generalized, it is possible to enlarge the class of conformal null Einstein-Maxwell fields to a wider family of Kundt spacetimes.