

Cauchy Goursat problems for Fuchsian Operators ¹

M. Belarbi and M. Mechab

Laboratory of Mathematics, Djilali Liabès University

B.P. 89, 22000 Sidi Bel Abbès, Algeria.

e-mail: mkbelarbi@yahoo.fr, mechab@yahoo.com, mechab@univ-sba.dz

Abstract

We are interested in sufficient conditions on partial differential Fuchsian operators. We give the result of existence and uniqueness of global solutions of the associated Cauchy and Goursat problems, in different functional spaces. Our techniques are those of C. Wagschal based on formal norms of Leray-Waelbroeck.

References

- [1] M. Baouendi & C. Goulaouic, *Cauchy problem with characteristic initial hypersurface*, Comm. Pure Appl. Math., 26, (1973), 455-475.
- [2] N. S. Madi, *Solutions locales pour des opérateurs holomorphes fuchsien en plusieurs variables*, Annali Math. Pura Appl., IV, Vol. CLXIII, 1993, 1-15.
- [3] M. Belarbi & M. Mechab, *The Fuchsian Cauchy problem*, *Electronic Journal of Differential Equations*,. , **Vol. 2009**, (2009), No. 102, pp. 1-12
- [4] C. Wagschal, *Le problème de Goursat non linéaire*, *J. Math. Pures et Appl.*, **58** (1979), 309-337.

¹Key words: Cauchy Problem, Goursat Problem, Global Solution, several Fuchsian variables, MSC: 35A05, 35B60, 35C10.