Let q be a function analytic in the unit disk $\mathbb{U}$. For $\alpha \in (0,1]$ we consider the nonlinear differential subordination and the differential equation of "geometric mean" type:

$$q(z)^{1-\alpha}[q(z) + zq'(z)]^{\alpha} = h(z), \quad z \in \mathbb{U},$$

$$q(z)^{1-\alpha}\left[q(z) + \frac{zq'(z)}{\beta q(z)^{1/\alpha}(z) + \gamma}\right]^{\alpha} = h(z), \quad z \in \mathbb{U},$$

with $q(0) = h(0) = 1$. Note that for $\alpha = 1$ the first case reduces to the differential equation which was solved by Hallenbeck and Ruscheweyh ([2]), and the second one to the Briot-Bouquet differential equation solved by Eenigenburg, Miller, Mocanu and Reade ([1]). An extensive survey of differential subordinations and equations is included in [4]. Both above equations are concerned with so-called "geometric means" and some classes of univalent functions defined by geometric means; for instance γ-starlike functions defined by Lewandowski, Miller and Złotkiewicz ([3]). The aim of the talk is to find the solutions of "geometric means" type equations that are the best dominants of the subordnination of the above form. In addition, we give some particular cases of main results obtained for appropriate choices of functions h.

[1] P. J. Eenigenburg, S. S. Miller, P. T. Mocanu, P. T. Reade *On a Briot-Bouquet differential subordination*, General Inequalities, 3, International Series of Numerical Mathematics **64** Birkhauser Verlag, Basel (1983), 339-348.
[2] D. J. Hallenbeck, St. Ruscheweyh, *Subordination by convex functions*, Proc. Amer. Math. Soc. **52** (1975), 191-195.
[3] Z. Lewandowski, S. S. Miller and E. Złotkiewicz, *Generating functions for some classes of univalent functions*, Proc. Amer. Math. Soc. **56** (1976), 111-117.
[4] S. S. Miller, P. T. Mocanu, "Differential Subordinations. Theory and Applications", Marcel Dekker, Inc, New York, Basel, 2000.