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**Three Extremal Problems
for Hyperbolically Convex Functions**

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Abstract. In this paper we apply a variational method to three extremal problems for hyperbolically convex functions posed by Ma and Minda and Pommerenke [6,14]. We first consider the problem of extremizing $\operatorname{Re} f(z)/z$. We determine the minimal value and give a new proof of the maximal value previously determined by Ma and Minda. We also describe the geometry of the hyperbolically convex functions $f(z) = \alpha z + a_2 z^2 + a_3 z^3 + \dots$ which maximize $\operatorname{Re} a_3$.

6 W. Ma and D. Minda, Hyperbolically convex functions, *Ann. Polon. Math.* **60** (1994) 1, 81–100. 95k:30037MR **95k:30037**

14 Ch. Pommerenke, private communication.