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Abstracts of Short Communications and Posters

Section:

8. Analysis

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The solution of Eremenko's extremal problem on harmonic functions

Let: z be the complex variable; (u_1, u_2) be a couple of harmonic in $|z| < 1$ functions having the least harmonic majorant v and the greatest harmonic minorant w with $v \geq 0$, $w(0) \geq 0$; F be the class of all such couples; $R := \sup_{(u_1,u_2)\in F} \max_{j=1,2} \sup\{r : \ r \geq 0, \ u_j(z) \geq 0 \ \ \forall z : |z| \leq r\}$.
A. Eremenko proved that $3 - 2\sqrt{2} \leq R \leq 2 - \sqrt{3}$, posed the problem to find R and conjectured that $R = 2 - \sqrt{3}$.
We have proved that $R = 3 - 2\sqrt{2}$, and established sharpend statements with complete description of all extremal cases for them. Furthermore, extentions are given for classes wider than R (without the requirement $v \geq 0$), and also for collections of n functions harmonic in the unit ball of the Euclidean space R^m ($\forall n \geq 2, m \geq 2$). (To be published in *Complex Variables* .)