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STABILIZATION IN $H^\infty_{\mathbb{R}}(\mathbb{D})$

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Abstract

It is shown that for $H^\infty_{\mathbb{R}}(\mathbb{D})$ functions f_1 and f_2 with

$$\inf_{z\in\mathbb{D}}(|f_1(z)|+|f_2(z)|)\geq\delta>0$$

and f_1 being positive on the real zeros of f_2, then there exists $H^\infty_{\mathbb{R}}(\mathbb{D})$ functions g_2 and g_1, g_1^{-1} with norm controlled by a constant depending only on δ and

$$g_1f_1+g_2f_2=1\quad\forall\, z\in\mathbb{D}.$$

These results are connected to the computation of the stable rank of the algebra $H^\infty_{\mathbb{R}}(\mathbb{D})$ and to results in Control Theory.

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