SOME QUESTIONS ON BLOCH FUNCIONS

DANIEL GIRELA

Abstract. A function f analytic in the unit disc $\mathbb{D}$ is said to be a Bloch function if $\sup_{z\in\mathbb{D}}(1-|z|^2)|f'(z)|<\infty$. The space of all Bloch functions will be denoted by $\mathcal{B}$.

It is well known that $H^\infty \subset \mathcal{B}$. A Bloch function need not be bounded. However, its maximun modulus grows very slowly. Indeed, we have

$$f\in\mathcal{B} \quad \Longrightarrow \quad M_\infty(r,f)=\mathrm{O}\left(\log\frac{1}{1-r}\right), \quad \text{as } r\to 1.$$

Define

$$A^0=\{f: f \text{ is analytic in } \mathbb{D} \text{ and } M_\infty(r,f)=\mathrm{O}\left(\log\frac{1}{1-r}\right), \text{as } r\to 1\}.$$

Notice that we have $\mathcal{B}\subset A^0$.

There are a lot of differences between the space $\mathcal{B}$ and the space A^0. In this talk we shall illustrate this fact by considering questions related with **results of Lindelöf about asymptotic values and non-tangential limits** and with the **sequences of zeros** of functions in these spaces.

This paper is an extended version of the talk I gave in the "International two-day Meeting on Complex, Harmonic and Functional Analysis" held in Thessaloniki in December 2003. I wish to thank Aristos Siskakis, Dimitrios Betsakos and, in general, to all the members of the Department of Mathematics of the University of Thessaloniki for inviting me to participate in such a nice meeting and for their excellent hospitality.

Departamento de Análisis Matemático, Universidad de Málaga, Campus de Teatinos, 29071 Málaga, Spain

E-mail address: `girela@uma.es`