Lanza de Cristoforis, Massimo

An inequality for Hölder continuous functions generalizing a result of Carlo Miranda.
(English) Zbl 07238025


This paper deals with the possibility of characterizing $\alpha$-Hölder continuous functions on an open set $\Omega \subseteq \mathbb{R}^n$ by means of quantities of the type

$$|t|^{1-\alpha}|Du(x + ta(x))|,$$

for $a$ a suitable vector field defined for $x \in \partial \Omega$. This question is actually a generalization of known results, in particular S. Agmon et al. [Commun. Pure Appl. Math. 12, 623–727 (1959; Zbl 0093.10401)] gave such a characterization for cylinders with $a$ the normal vector field, while C. Miranda [Atti Accad. Naz. Lincei, Mem., Cl. Sci. Fis. Mat. Nat., VIII. Ser., Sez. I 7, 303–336 (1965; Zbl 0183.12701)] gave a characterization of this type for $C^{1,\alpha}$-domains.

The author significantly improves upon known results by defining suitable non-tangential vector fields $a$ on the boundary of $C^{0,1}$-domains. This allows to properly describe tubular neighborhoods of the boundary and, in turn, to estimate Hölder seminorms with the above mentioned quantity, hence characterizing $\alpha$-Hölder continuous functions in such domains.

For the entire collection see [Zbl 1446.74005].

Reviewer: Davide Buoso (Alessandria)

MSC:

26D10 Inequalities involving derivatives and differential and integral operators

26B35 Special properties of functions of several variables, Hölder conditions, etc.

Keywords: Hölder continuous functions; several real variables

Full Text: DOI

References:


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.