

On analytical conditions of generalized linear convexity

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In terms of nonnegativity and positivity of some special quadratic differential forms we give, respectively, necessary and sufficient conditions of local linear convexity of domains with smooth boundary in multidimensional spaces under the algebra of real quaternions, the algebra of generalized quaternions and the Clifford algebras. These conditions are natural counterparts of analytical conditions of local linear convexity of domains with smooth boundary in multidimensional complex space proposed by B. Zinoviev in 1971.

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- (2) Osipchuk T.M. *Analytic conditions of local linear convexity in \mathbb{H}^n* // Zb. prats of the Inst. of Math. of NASU, 2006, **3**, No 3, P. 244-254 (in Ukrainian).
- (3) Osipchuk T.M., Zelinskii Yu.B., Tkachuk M.V. *Analytical conditions of locally general convexity in $C_{p,q}^m$* // Zb. prats of the Inst. of Math. of NASU, 2010, **7**, No 2, P. 393-401 (in Ukrainian).
- (4) Osipchuk T.M. *Analytical conditions of local linear convexity in the space $\mathbb{H}_{\alpha,\beta}^n$* // Zb. prats of the Inst. of Math. of NASU, 2013, **10**, No 4-5, P. 301-305.