

ON 2-CONVEX EMBEDDINGS OF NON-ORIENTABLE SURFACES IN FOUR-DIMENSIONAL  
EUCLIDEAN SPACE

**Dmitry V. Bolotov**

(B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of  
Sciences of Ukraine, 47 Nauky Ave., Kharkiv, 61103, Ukraine)

*E-mail:* bolotov@ilt.kharkov.ua

Let us recall the definition of  $k$ -convexity of a subset of a Euclidean space (see [1]).

**Definition 1.** A subset  $C \subset E^n$  of Euclidean space is called  $k$ -convex if through each point  $x \in E^n \setminus C$  there passes a  $k$ -dimensional plane that does not intersect  $C$ .

Note that the usual convexity corresponds to case  $k = n - 1$ .

We present the following result.

**Theorem 2.** *The Projective plane and the Klein bottle do not admit a 2-convex embedding in a four-dimensional Euclidean space if the embedding is assumed to be  $C^2$ -smooth or is a PL-embedding such that the valence of the vertices does not exceed five.*

REFERENCES

- [1] Yu. B. Zelinsky, *Vypuklost'. Izbrannyye glavy*, Inst. matematiki NAN Ukrainy, Kiev, 2012.