
Marina Borovikova and Zair Ibragimov

The Third Symmetric Product of \mathbb{R}

CMFT 9 No.1 (2009), 255–268. [ISSN 1617-9447]

Abstract. We study geometry of the space of all non-empty subsets of the real line \mathbb{R} of cardinality at most three endowed with the Hausdorff metric. The space is known to be homeomorphic to the 3-dimensional Euclidean space \mathbb{R}^3 . We prove that it is, in fact, $(3 + 4\pi)$ -bi-Lipschitz equivalent to \mathbb{R}^3 . We also show that all isometries of \mathbb{R}^3 are induced by isometries of \mathbb{R} .

Keywords. Symmetric products, isometry, bi-Lipschitz maps.

2000 MSC. Primary 30C65; Secondary 54B20.

Received. February 11, 2008, in revised form April 17, 2008.

Published online. May 26, 2008.