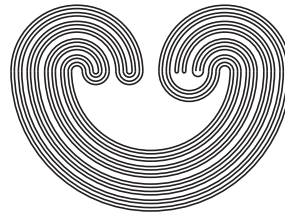


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ON THE GROMOV-HAUSDORFF QUASI-METRIC DISTANCE

by

OLIVIER OLELA OTAFUDU

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ON THE GROMOV-HAUSDORFF QUASI-METRIC DISTANCE

OLIVIER OLELA OTAFUDU

*Dedicated to Professor Rebecca Walo Omana on the occasion of her promotion to
emeritus professor*

ABSTRACT. We introduce the concept of the Gromov-Hausdorff quasi-metric distance between two quasi-metric spaces. We then use this concept to study the stability estimates of two Isbell-hulls quasi-metric spaces. Moreover, we obtain the asymmetric version of the following well-known result: the Gromov-Hausdorff distance of two hyperconvex metric spaces generated by certain subsets is less than or equal to the Gromov-Hausdorff distance of these sets.

1. INTRODUCTION

The theory of the Gromov-Hausdorff distance was introduced in 1981 by Gromov [4]. Since its inception, this important concept has become a fundamental tool in geometric metric theory, topology, and many other areas of pure and applied mathematics. It is used to compare the “distance” between two metric spaces (see [1, 10, 11, 17]). The Gromov-Hausdorff distance has been applied in diverse fields, including topological data analysis, robotics, and Riemannian geometry [12].

The theory of stability of metric spaces utilizes the Gromov-Hausdorff distance to measure the dissimilarity between two metric spaces; it achieves this by finding the best possible approximation of one space within the other after isometrically embedding them into a common space. The

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Key words and phrases. Hausdorff distance, Gromov-Hausdorff distance, Isbell-convex quasi-metric space.

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