Erratum to: The Configuration Space Integral for Links in $\mathbb{R}^3$

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Abstract

In this paper we give some corrections to a mistake happened in a paper about a link invariant called Configuration Space Integral. The Configuration Space Integral can be seen as a generalisation of the Gauss formula for the linking number of two knots. This invariant is a strong finite type invariant for links and knots. We will correct the mistake and reprove the concerning theorems.

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1 Introduction

In this paper we give some corrections to a mistake happened in the paper "The Configuration Space Integral for Links in $\mathbb{R}^3$" by Sylvain Poirier [1]. The Configuration Space Integral can be seen as a generalisation of the Gauss formula for the linking number of two knots. This invariant is a strong finite type invariant for links and knots. In section 2 we are giving some definitions in this field and in section 3 we will correct the mistake. In the last section we give a proof for compactification result using the new diffeomorphism defined in section 3.

2 Definitions

Let M be a compact one-dimensional manifold with boundary. Let L denote an embedding of M into $\mathbb{R}^3$. We say that L is a *link* if we moreover have the condition that the boundary of M is empty. And a link L it is a *knot* when $M = S^1$.

The configuration space integral is a linear combination of integrals on configuration spaces of a link. In [1] this integral is defined. For proving that this integrals converge, the author chose a compactification of a configuration space which has a natural structure of a smooth manifold. In this process Poirier constructed the compactified space $\mathcal{H}(G)$ of a graph G, that is defined as follows:

Definition 2.1. If A is a finite set with at least two elements, let C^A denote the space of non-constant maps from A to $\mathbb{R}^3$ quotiened by the translation-dilations group (that is the group of translations and positive homotheties of $\mathbb{R}^3$).

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