



Local Uniqueness of the Circular Integral Invariant

Martin Bauer, Thomas Fidler, Markus Grasmair

(Submitted on 21 Jul 2011 (v1), last revised 4 Sep 2012 (this version, v3))

This article is concerned with the representation of curves by means of integral invariants. In contrast to the classical differential invariants they have the advantage of being less sensitive with respect to noise. The integral invariant most common in use is the circular integral invariant. A major drawback of this curve descriptor, however, is the absence of any uniqueness result for this representation. This article serves as a contribution towards closing this gap by showing that the circular integral invariant is injective in a neighbourhood of the circle. In addition, we provide a stability estimate valid on this neighbourhood. The proof is an application of Riesz-Schauder theory and the implicit function theorem in a Banach space setting.

Subjects: **Numerical Analysis (math.NA)**; Functional Analysis (math.FA)

MSC classes: Primary: 46T10, Secondary: 46N20

Cite as: **arXiv:1107.4257 [math.NA]**

(or **arXiv:1107.4257v3 [math.NA]** for this version)

Submission history

From: Markus Grasmair [[view email](#)]

[v1] Thu, 21 Jul 2011 12:48:38 GMT (15kb,D)

[v2] Tue, 24 Apr 2012 06:09:28 GMT (17kb,D)

[v3] Tue, 4 Sep 2012 14:42:24 GMT (19kb,D)

[Which authors of this paper are endorsers?](#)

Download:

- [PDF](#)
- [Other formats](#)

Current browse context:

math.NA

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[math](#)

[math.FA](#)

References & Citations

- [NASA ADS](#)

Bookmark ([what is this?](#))

