

UNIVERSIDADE ESTADUAL DE CAMPINAS  
SISTEMA DE BIBLIOTECAS DA UNICAMP  
REPOSITÓRIO DA PRODUÇÃO CIENTÍFICA E INTELLECTUAL DA UNICAMP

**Versão do arquivo anexado / Version of attached file:**

Versão do Editor / Published Version

**Mais informações no site da editora / Further information on publisher's website:**

Sem URL

**DOI: 0**

**Direitos autorais / Publisher's copyright statement:**

©2024 by IMECC. All rights reserved.

DIRETORIA DE TRATAMENTO DA INFORMAÇÃO

Cidade Universitária Zeferino Vaz Barão Geraldo

CEP 13083-970 – Campinas SP

Fone: (19) 3521-6493

<http://www.repositorio.unicamp.br>

# Communications

## **On the Hausdorff dimension and Cantor set structure of invariant sliding Shilnikov sets**

Matheus G. C. Cunha

mathgccunha@ime.unicamp.br

Universidade Estadual de Campinas, Brazil

We will study sliding Shilnikov connections, a recently introduced object of Filippov systems that implies chaotic behavior on an invariant subset of the system. In this talk, we conduct a local analysis on the first return map associated with a Shilnikov sliding connection, which reveals a conformal iterated function system (CIFS) structure. Utilizing this theory, we estimate the Hausdorff dimension of the local invariant set of the first return map, demonstrating that it is strictly greater than zero and strictly less than one, and its one-dimensional Lebesgue measure is zero. Furthermore, we prove that the closure of the local invariant set is a Cantor set with the same Hausdorff dimension and Lebesgue measure as the original invariant set. Additionally, it is defined as the invariant set augmented with the set of all pre-images of the regular-fold point.

---