

阪大-阪市大-神戸大-九大合同幾何学セミナー（第8回）

GEOSOCK セミナー：「曲面論と可積分系」

Franz Pedit 教授 連続講義

「Constrained Willmore 予想に向けて」

日程：平成26年（2014年）1月9日（木）-1月10日（金）

場所：大阪市立大学 杉本キャンパス 共通研究棟3階 301室（数学講究室）

組織者：後藤 竜司（大阪大学），Wayne Rossman（神戸大学），小磯 深幸（九州大学），
大仁田 義裕（大阪市立大学）

主催：大阪大学大学院理学研究科数学教室，神戸大学大学院理学研究科数学教室，
九州大学大学院数理学研究院，大阪市立大学数学研究所

プログラム：

1月9日（木）

13:30-15:00 Professor Franz Pedit (University of Tübingen, Germany)

Lecture 1: “Constrained Willmore Surfaces: Theory and Experiment”

15:15-16:45 Professor Katsuhiko Moriya (University of Tsukuba, Japan)

“Some results about twistor holomorphic maps”

1月10日（金）

13:30-15:00 Professor Franz Pedit (University of Tübingen, Germany)

Lecture 2: “Conformal Willmore flow”

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プログラムなど詳細については下記ホームページを参照下さい。

URL: <http://www.sci.osaka-cu.ac.jp/~ohnita/2013/GEOSOCKsem/GEOSOCKsem140109.html>

Program:

January 9 (Thu)

13:30–15:00 Franz Pedit (1)

15:15–16:45 Katsuhiko Moriya

January 10 (Fri)

13:30–15:00 Franz Pedit (2)

Abstract:

Professor **Franz Pedit** (University of Tübingen, Germany) :

1. Constrained Willmore Surfaces: Theory and Experiment

Abstract:

Constrained Willmore surfaces are critical points for the Willmore energy under variations of the surface preserving its conformal structure. We will explain the (very few) known results for compact surfaces in general and then focus on the case of tori. Here theoretical results and experimental work (equivariant examples, conformal Willmore flow) come together to suggest a first picture of what a “constrained Willmore conjecture” might look like.

2. Conformal Willmore flow

Abstract:

We will construct a flow on compact surfaces which preserves the conformal type and decreases the Willmore energy. In good cases this flow will push the compact surface to a constrained Willmore minimizer. An interesting feature of this flow is that it preserves derivatives, in other words, it can be regarded as an ODE on any of the Hölder spaces. This makes this flow analytically much easier to study than the usual L^2 Willmore gradient flow. We will explain this flow first on closed planar curves as an alternative to the curve straightening and curve shortening flows. The surface version of the flow is then constructed in a similar way using the mean curvature half density of the surface (instead of the curvature in the case of planar curves).

Professor **Katsuhiko Moriya** (University of Tsukuba) :

Title: **Some results about twistor holomorphic maps**

Abstract:

A map from an almost Hermitian manifold to an even dimensional Riemannian manifold is called twistor holomorphic if it has a lift to the twistor space and it is holomorphic with respect to almost complex structures. A twistor lift is used to investigate conformal geometry of a twistor holomorphic map. I will report recent results about twistor holomorphic maps by Japanese mathematicians.