立命館大学幾何学セミナー

　来る**7月29日（月）**に立命館大学幾何学セミナーが行われます. みなさまのご参加をお待ちいたしております.

日時: **2019年7月29日（月）17:30〜19:00**

場所: 立命館大学びわこ・くさつキャンパス
ウェストウィング6階 談話会室

講演者:

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タイトル:

Petrov Module for a Family of Generalized Liénard Integrable Systems

アブストラクト:

The second part of the Hilbert's 16th problem asks for the maximal number of limit cycles that a polynomial vector field of the form $\dot{x} = P(x,y)$, $\dot{y} = Q(x,y)$ for a given degree, in the plane can have. Although the problem is more than 100 years old it is not even known whether a uniform upper bound, only depending on the degree of the vector field, might exist. In the year 2000, S. Smale proposed a "simplified" version of this question in his list of problems for the 21st century. This simplified version restricts the vector field to the classical (polynomial) Liénard equations $\dot{x} = y - f(x)$, $\dot{y} = -x$. I will present a work in which we use the Lambert special function in order to study a family of integrable generalized Liénard equations X_f of the form $\dot{x} = y - f(x)$, $\dot{y} = -f'(x)$ which display a center. Instead of a bound on the number of limit cycle, we propose some tools which might be useful to address this question. We first prove a conjugation lemma inside a continuum of nested periodic orbits. Then we deduce an explicit operator of Gelfand-Leray associated with the Hamiltonian of equation X_f. Afterwards, we provide a generating family for the associated Petrov module. Finally, by using the Lambert function, we study the monotonicity of the Abelian integral of this generating family's elements.

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